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One of the interesting changes brought about by the war has been the almost complete disappearance of the hobo.

The Exit of the Hobo

From the earliest days of the American railroads he has been a familiar figure on the track, especially in the middle west. Until comparatively recently he has been the main dependence of the roads for new construction work as well as for rail relaying gangs. Within the last few months he has disappeared and the track has lost one of its most interesting characters and, with all of his faults, one of its most efficient classes of workmen. Now that he has been absorbed into other industries it is doubtful if he will ever return to track work in any considerable numbers.

In a letter addressed to Carl Gray, director of the division of operation of the United States Railroad Administration, R. H. Aishton, regional director of the Northwestern region,

The Value of Conventions

recommended that the attention of all the regional directors be called to the convention of the Roadmasters' Association and that they be urged to have a full representation of their roadmasters at this meeting. In this letter Mr. Aishton stated that he had seen incalculable good come from the attendance of roadmasters on lines with which he had been connected and that attendance at this meeting would "put into these men a lot of enthusiasm for their work which cannot but result in a great deal of benefit." In this letter Mr. Aishton has pointed out one of the most important benefits derived by those who attend the maintenance of way conventions. The roadmasters, master carpenters, general painting foremen and others who attend the conventions of the

smaller maintenance of way associations are in general men whose opportunities to come in contact with other railway men are limited to the relatively small mileage over which they have jurisdiction. The primary and principal benefit from a convention comes, of course, from the practical information brought out in the presentation and discussion of the committee reports. However, one should not lose sight of the more or less intangible but nevertheless real benefits which come from meeting with others engaged in the same line of work and from the enthusiasm which comes from such gatherings.

Very soon after the government assumed control of the railroads under the management of Director General

Courtesy Is an Essential

McAdoo, there was repeated evidence of a tendency upon the part of employees to assume an arbitrary and discourteous attitude toward patrons. Various requests for accommodations which had been granted almost universally in the past were denied on the excuse that government operation made compliance with such requests inadvisable or unnecessary. The public was quick to note these changes and it is possible that the reports of these tendencies appearing in the papers of the country were exaggerated. However, Director General McAdoo and several of the regional directors have called attention to these conditions in no uncertain language, and have instructed that under no circumstances shall there be any lessening of the spirit of service on the part of railway employees towards the public. While this does not apply to the maintenance of way employee in the same degree as to the operating or traffic man, it is equally true in so far as the former is brought in contact with the public in the

course of his work, for every man, woman and child in this country is a patron of the railroads. Section foremen in particular have always been urged to cultivate friendly relations with the owners of property abutting on the right-of-way and they should understand that their efforts to further such relations should under no circumstances be discontinued by reason of government management of the railroads.

THE NECESSITY FOR FIELD SUPERVISION

THE EXTENT to which this season's work will be completed depends more than ever before on the ability and ingenuity of the supervising officers in overcoming obstacles. With shortages of both labor and materials and with the increasing independence and inefficiency of the men that are available, the situation is really appearing hopeless to the less resolute. However, the tracks and structures must be maintained and it is the duty of every employee of the maintenance of way department to do his utmost in order that the properties may be maintained in the best possible shape under existing conditions. This calls for more intensive supervision, particularly by the roadmasters and the supervisors of bridges and buildings who are directly in charge of the gangs and in daily contact with them. The present is no time for desk supervision. Rather conditions demand thorough familiarity with the work in the field and with its progress from day to day. If properly selected, the supervisor is a man of broader experience than his foremen. Because of this fact he should be able to assist them in planning their work to secure the best results, selecting that most essential for first attention and even eliminating certain details previously considered necessary, if this can be done without injury.

By keeping constantly in touch with his foremen the supervisor can give them the benefit of his experience and in large measure raise the standards of the foremen to that of the supervisor. Every gang directed from non-essential to essential work even for an hour, every element of lost motion removed, every inefficient method replaced by a better one, contributes to the common result of increasing the output of constructive work necessary to the maintenance of our transportation systems. The extent to which lost motion is eliminated and the attention of the forces concentrated on work of an essential character is one test of successful supervision.

HELPING TO WIN THE WAR

MANUFACTURERS of war materials, in dealing with the perplexing intricacies of the labor problem that are constantly confronting them, have made a special point of driving home to the individual workmen the vital necessity of the work they are doing as a factor in winning the war. This campaign has been eminently successful, and for good reasons; the machine operator who has completed his allotted work on 25 more shrapnel shells to-day than he did yesterday has the satisfaction of a very positive evidence of his increased usefulness in the job of killing the Boche. He can easily be made to see that the more shells he makes in a day, the quicker the war will be won. Railway officers have in like manner directed the attention of employees in the train service to the important relation of efficient transportation to our success on the Western front and it is not difficult to demonstrate to the train crews that the expeditious movement of a train load of shells, ship steel, sugar or soldiers from the interior to the seaboard is of vital importance.

His relationship to the war may seem rather far-

fetched to the man in the maintenance of way department, and he may feel that the work of the track man or bridge carpenter 3,000 miles away is as nothing compared to the work of the engineer troops who maintain the narrow gage lines on the front. Be this as it may, the maintenance work on the tracks and structures of the railroads in this country must go on if we are to win the war, and while the railroad man should be cautioned not to overestimate his own difficulties and needs in the light of the needs of the entire country in winning the war, he should bear in mind that his work is in the essential class. The railroads must be maintained if they are to carry the war traffic and this cannot be done without the help of the maintenance man. It is, therefore, the duty of every officer in the department to instill into the minds of his men the true sense of responsibility which this charge implies.

THE SMALL JOB IN MAINTENANCE OF WAY

AS A RAILROAD is primarily a means of connecting locations at a distance from each other, it naturally follows that the maintenance of railroad property implies the care of structures widely separated and since considerations of efficient management require a certain degree of centralized control and specialized workmanship, it becomes necessary for many of those who do the work, as well as those who supervise it, to travel considerable distances in the course of their employment. This condition is basic and must be assumed as unchangeable in any studies for increasing the efficiency of maintenance work.

Certain operations like track work are carried on in such volume that it is possible to employ gangs of men at fixed locations, while the larger items of track work and the important repair work done by the bridge and building department require the placing of groups of men at definite locations for a sufficient length of time to justify the establishment of more or less complete living accommodations for them. However, there are certain classes of work, particularly in building repairs and water service, which require the time of one man for only a few hours. It is the effective completion of this work scattered over several hundred miles of line, with infrequent train service, which imposes the greatest problem on the maintenance officer.

On another page of this issue several railway men discuss this problem from a number of different angles. While they suggest widely differing methods they are unanimous on one point, the limitation of the contract system, or as one man puts it, "even if a man does travel a hundred miles to do a half hour's work, it would be cheaper than to have some men travel the same distance to hire some one else to do it." This conclusion is, of course, based on the principle that, except in most minor details, the station agent is not qualified to handle the letting of such work by contract without close supervision on the part of the bridge and building officer.

The first principles in good management demand that the work be scheduled and classified to require a minimum of traveling, but on any work that does not require a gang with a boarding car a problem arises in providing accommodations for the workman. For work within 20 or 30 miles of his home he can travel out and in each day, but for greater distances he must either find lodging or spend an excessive number of working hours on the train. The motor car will relieve the situation materially, but it will not solve the problem in all cases. This situation naturally suggests the expense account, the control of which imposes a delicate and disagreeable task on the

division executive. It is common knowledge that expense money will be used with less conservatism and care than the personal funds of the individual, but it is also true, as one of the contributors points out, that the man who must spend his own money for lodgings will use company time to reach the most economical place. It suffices to say that in spite of the fertile possibilities of abuse there are many situations under which a system of expense allowances, prudently yet reasonably administered, will prove an economical investment.

One of the most important facts to be learned from the discussions of this subject is the virtue of adequate maintenance. The most expensive work to be handled is the unforeseen or emergency jobs which require men to make long jumps and involve the shipping of material in express or baggage cars. Such conditions arise primarily in cases where the maintenance work has been neglected and are rare on the property that is kept in good condition at all times.

THE SOLUTION OF THE LABOR PROBLEM

THE SHORTAGE OF LABOR is steadily becoming more acute as the season advances. Recent estimates have indicated a total present shortage of over 500,000 men in the industries of the United States. While this condition is universal among all industries, it is particularly pronounced on the railways. Although the roads are an essential unit in the military establishment of this country they have lost many men to munitions plants and other war time industries able to pay higher wages. The general superintendent on a large western road stated recently that he was short 1,500 men out of a normal force of 6,000. This is largely typical of conditions existing in the maintenance of way department over the entire country and indicates a total shortage in this branch of railway service alone of from 75,000 to 100,000 men. With such a condition confronting the roads at a time when the demands for transportation are greater than ever before it is important to consider the steps which are being taken to relieve conditions.

The United States Department of Labor has issued numerous statements regarding the measures which it is planning to adopt to aid the railways and other industries. As early as a year ago it was stated that 100,000 Porto Ricans were available for employment in this country and that arrangements had been made to bring them in. Since that time similar statements have been issued at intervals, but so far as has been announced none of these men have yet been made available for the railways.

Probably the largest source of labor readily available is Mexico. Unfortunately, shortly before our entrance into the war, Congress passed legislation imposing a head tax and a literacy test on all immigrants, shutting off the entrance of Mexicans, so vital to the railways of the Southwest and the Middle West. These restrictions have recently been lifted to some extent, but they were raised so late in the season and the restrictions still imposed are so burdensome that only a limited number of men are being secured from this source.

The most recent action of the United States Department of Labor has been the issuance of instructions prohibiting industries employing over 100 men to recruit their forces from other than the United States Employment service. The railways were specifically exempted from this rule, so that they are free to recruit their forces as in the past. Since the United States Department of Labor has not adopted any measures affording material relief to the roads, it is evident that they must continue to look to their own resources to secure the labor neces-

sary for the maintenance of their properties. This places the problem for the recruiting of adequate forces primarily on the supervisors and the foremen.

While difficult, the problem is not impossible of solution, even under the present adverse conditions. The higher wage rates now being paid are enabling many foremen in rural communities to secure more native men than formerly, entire divisions being so recruited in some instances. The passing of the harvest season is also releasing many men. In some localities the enforcement of the "work or fight" order has resulted in additions to the track forces. The alert supervisor and foreman who take advantage of these conditions as they develop can do much to relieve the shortage of men in their gangs. When efforts such as these are duplicated on each section and subdivision of a system the relief becomes large in the aggregate.

WATCH THE WOODEN BRIDGES

WHILE WOODEN BRIDGES and trestles constitute a long established form of construction and one which will continue to form an important part of the permanent way of American railroads for many years to come, they possess one disadvantage in the form of the fire hazard. It is true that the number of structures of this kind that are destroyed by fire each year constitute but a small per cent of the total number in service; nevertheless, not a few of them are so destroyed and it is probably this hazard more than any other disadvantage which is leading to the gradual substitution of concrete or steel construction, after due account has been taken of the relative frequency of renewals of the several forms of construction under consideration.

Because of the danger of fire, it has become standard practice to use certain forms of deck construction that are designed to reduce the possibility of ignition from the most common source of fire, namely, sparks from passing locomotives. These protections are commonly in the form of sheet metal coverings of the deck or layers of gravel or of finely crushed stone for which purpose a solid deck is formed by filling the space between the ties with boards. Provision for water barrels at intervals along the deck is a practice probably as old as the railroads themselves.

One common failing of these forms of protection is that in case of inadequate maintenance they may become as much a source of additional danger as a protection. Open joints in a sheet metal covering afford lodgment for burning embers in some concealed corner where an incipient fire may gain considerable headway before it becomes visible. Moreover, water barrels are of no avail unless they are kept properly filled. Attention to such small details as these constitute a part of the master carpenter's duty. They occupy the time of his men in a way that does not show any very tangible results for the amount of time and money expended. Neglect to carry out repairs of this kind, even though most necessary, is not evidenced through any reduction in capacity or effectiveness of the railroad. It is but natural, therefore, that in times of shortage of men such as now confront us, the master carpenter will have a tendency to withdraw men from work of this character in order that his gangs engaged in the seasonal renewals may make the greatest progress. In view of the serious consequence which may result from a single fire, it is clear that a neglect of protection is a most short-sighted policy. One fire can undo the work of a large gang for a month's time, while the possibility of a train accident resulting therefrom cannot be measured in terms of money.

LETTERS TO THE EDITOR

KICK LESS AND WORK MORE

Spokane, Wash.

TO THE EDITOR:

Having read many articles and being in a position to hear many expressions regarding the woes, trials and tribulations that are going to befall all who have to do with maintenance of way owing to shortage of labor and materials, and rate of wages, I cannot refrain from thinking what a beneficial effect it would have were we all to take a brace, assume a less gloomy view of present conditions, and instead of bewailing our fate, deal with the present and hope that in the end all things will adjust themselves. What is wanted is more resourcefulness in getting additional wear out of the material on hand. I know of roads that do not know what it means to exchange rail from one side of a curve to the other in order to increase the life thereof. Rails from the leads of main line switches can also be taken out to replace battered and worn rail, the latter to be used in their stead. If we have no labor at one place it may be secured at another. We hear too much about the labor being incompetent. We should make the best of any and everything during these trying times, as anything is better than nothing.

What is needed is a campaign to demonstrate the best methods of accomplishing the work. For instance, not enough thought is given to the amount of time consumed in the lining and raising of track. A foreman starts out to line a stretch of track and walks the men back and forth a number of times throwing track (which is the hardest kind of work), although it can readily be understood how a man can do this job as well if not better by only going over it once or twice, and he can accomplish so much more and with so much less effort. This is true also in raising track; it is a hard job to be dragging the track jacks back and forth. The same thing applies to putting in ties, dressing ballast and cutting weeds. My idea is to cut the weeds to the outer edge of the ballast line with shovels or weed hoes, and to leave the remainder to be cut with scythes. A great deal of labor can be conserved in this one thing. There is entirely too much weed cutting being done now just to please the eye. A great deal of track requires little weed cutting except on grades, until the final clearing in the fall, but wherever it is necessary that grass and weeds should be cut to the line, none should be cut on sub-grade except with scythes.

If we have no laborers on certain stretches of track, now that we have motor cars, foremen can work together and accomplish a great deal. In certain localities trains run in such a way that foremen can be brought together to places requiring attention and returned home by trains in the evening. Roadmasters can do much good by getting out on the job among their men, helping to line track and take part in the work of each gang, especially where a shortage of labor exists. This not only helps greatly in the amount of work accomplished, but demonstrates the fact that the boss knows how to do the actual work. The foreman naturally takes part in the work and by so doing the men are more willing to put forth more effort. The right kind of a foreman knows and plans one day what he is going to do the next. He also sets a mark which he strives to reach at the close of each day's work.

Too much should not be expected of foremen. If they were all sufficiently qualified there would be little if any need for roadmasters. There never are so many inferior foremen on a district but what a roadmaster can and should spare sufficient time to help them instead of telling how little they know. By getting out the roadmasters can get acquainted with the laborers, some of whom always excel others. By observing these and requesting foremen to give them a show, by letting them raise and line track, the roadmaster will never be hard up for new foremen. The track foreman's job is a good one. The chances for advancement are the same as in any other occupation, for if one possesses the right kind of stuff and ability his work will speak for itself. I dare say that it takes less time for a person that is apt and interested to become qualified for a foremanship than in almost any other occupation.

What has prompted the writing of this letter is the many unfavorable comments the author has heard since war was declared, and the depressing effect such expressions are bound to leave. He does not think there are any conditions or circumstances, at least not up to the present time, that warrant any lack of confidence in the powers that be to tide us over and that all things will adjust themselves in the future as has been done in the past.

TRACKMAN.

NEW BOOKS

Government Iron and Steel Prices. 6 in. by 8 in., 78 pages, bound in paper. Published by the Penton Publishing Company, Cleveland, O. Price \$1.

The prices on all the various raw materials, finished and semi-finished products, established by the Government beginning with the first proclamation of September 24, 1917, constitute such a complex fabric of schedules that there has been a distinct need for a compilation of these prices in a convenient form for ready use and this is thoroughly fulfilled in the publication described above. Sixty-two pages are devoted to schedules of the various materials and products, classified for most convenient reference. Thus under railroad material are found light rails, angle bars, track bolts, tie plates, track spikes, boat spikes, etc. The book also contains information on the history of price fixing in the steel industry and the personnel of the organizations having this work in hand.

Proceedings of the American Wood Preservers' Association. 262 pages, illustrated, 5 in. by 9 in. Bound in cloth and paper. Published by the American Wood Preservers' Association, F. J. Angier, secretary, Mt. Royal Station, Baltimore, Md. Price, in cloth binding, \$3.50; paper \$2.50.

This volume contains the proceedings of the fourteenth Annual Meeting, held at Chicago, on January 22-24, 1918, inclusive. Among the papers of special interest to railway men are those on labor conditions; conditions in the tie market and present sources of supplies; the relation between the average life of ties and the percentage of renewals; and the effects of the war on timber of various sizes and committee reports on the purchase and preservation of treatable timber, and fire protection as applied to wood preserving plants.

THE NUMBER OF FREIGHT CARS saved on the Southern Pacific (Pacific System) by economy in loading during the six months ending June 30, 1918, was 48,951. During the six months the tonnage loaded totaled 9,783,635 tons of commercial freight, compared with 9,537,062 tons for a corresponding period in 1917, an increase of 246,573 tons.

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MAINTAINING A RAILROAD ABOVE THE CLOUDS

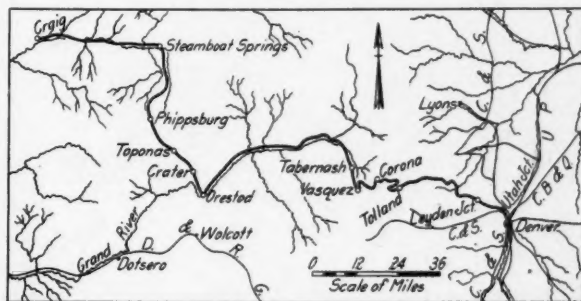


The Problems Encountered in Keeping Open a Line Reaching an Elevation of Over 11,000 Feet

The Snow Shed and Water Station at Corona

WHEN OPERATION is maintained throughout the year over a line with an average elevation of 8,000 ft. and a maximum of 11,660 ft. under climatic conditions so severe that 19 per cent of all maintenance of way charges for the entire year and 41 per cent of those for the six months from October, 1916, to March, 1917, inclusive, are for the handling of snow and ice, the line stands out as unique among the railroads of this country. Such are the conditions on the Denver & Salt Lake, commonly known as the Moffatt line.

This line extends northwest from Denver to Craig, Colo., 255 miles. It was projected for the development



A MAP OF THE LINE

of extensive coal fields and agricultural areas in northwestern Colorado and was intended to extend west to Salt Lake City, Utah, thus forming a short line between Denver and Salt Lake.

GENERAL CHARACTERISTICS

Starting from its own terminal in Denver (owned by the Northwestern Terminal Company, a subsidiary of the Denver & Salt Lake) the line plunges directly into the mountains. At Leyden Junction, 13 miles out, the line starts on a nearly continuous 2.00 per cent compensated grade 40.4 miles long extending to East Junction, a point about 6 miles beyond Tolland. Through this portion of the line the route follows the canyon of South Boulder creek and involves heavy construction

with numerous tunnels and bridges. At the end of the 2 per cent line the grade increases to 4 per cent, which is nearly continuous for over 12 miles to the summit of Rollins pass at Corona with an elevation of 11,660 ft. On the western slope of the continental divide the line descends on a 4 per cent grade nearly continuously for 15.22 miles to Vasquez at which point the grade changes to 2 per cent for 4 miles and then to 1.76 per cent for almost 10 miles through Tabernash. Beyond this point the line follows the valley of the Grand river 62 miles with a continuous descending grade of 1 per cent maximum to Orestod at elevation 6,700. Here the line leaves the river and again descends to a secondary summit at Toponas, which is at an elevation of 8,283 ft. This climb is negotiated by means of 10.23 miles of 2 per cent and 15.38 miles of 1 per cent grade. Beyond Toponas the line descends on grades ranging from 1.8 per cent between Toponas and Oak Hills to a maximum of 0.5 per cent west of Steamboat Springs until at Craig, an elevation of 6,175 ft. is reached, 1,000 ft. above Denver.

It will be noted that the maximum grade over the entire line is 2 per cent except for 27.63 miles between East Junction and Vasquez. When the road was built this limit was set as a maximum for the entire line, and the 4 per cent grade over the summit was inserted only as a temporary expedient until a tunnel 6.04 miles long could be driven through the continental divide. Since the line has been opened it has never been possible to finance the construction of this tunnel, so the 4 per cent grade over the summit has remained in service until the present time.

It is to be expected that the curvature will be equally heavy since the entire line passes through a mountainous country and follows the canyons of streams for a large part of the way. The maximum rate of curve is 12 deg. except on the 4 per cent line, where 16-deg. curves were permitted. The percentage of the line which is curved is unusually high, over 127 miles, or 50 per cent, of the entire mileage being on curves. On the 27.65 miles of 4 per cent line 78.3 per cent is on curves and 31 per cent of this distance is on curves of 16 deg.

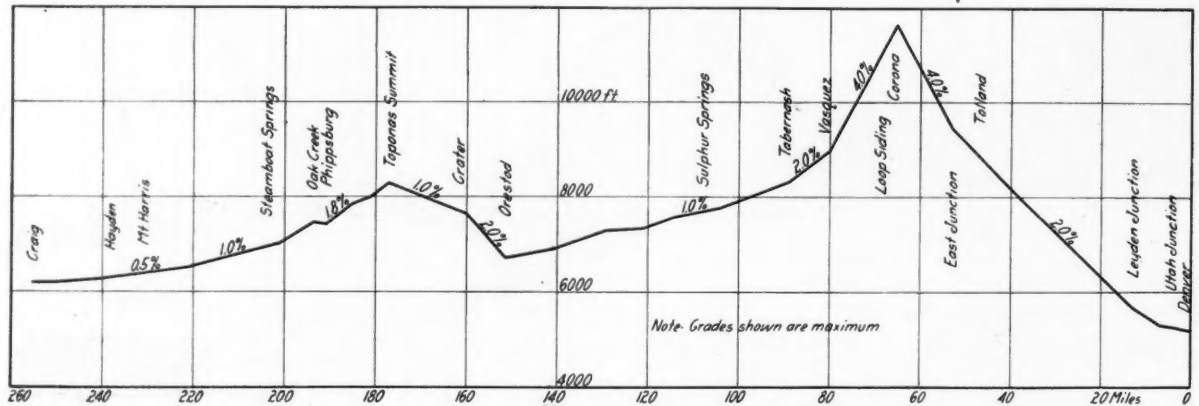
This road is equally remarkable with respect to tun-

nels. In the 215 miles east of Steamboat Springs there are 55 tunnels, 22 of which are on the 65 miles east of the divide. The longest tunnel has a length of 1,729 ft. The rough character of the country is indicated by the fact that in one stretch of 8 miles in South Boulder canyon on the eastern slope of the Continental Divide, there are

lowered 8,133 ft. in a distance of 231 miles, while that from Oak Creek must be raised approximately 1,000 ft. less and lowered the same amount.

UNUSUAL CONDITIONS AFFECT MAINTENANCE

The road is operated in three districts, the first extending from Denver over the summit to Tabernash, a



A PROFILE OF THE LINE SHOWING THE MAXIMUM GRADES

11 tunnels and 22 bridges ranging from 40 to 90 ft. in height.

The passenger traffic is that local to the line with a considerable tourist travel during the summer months.

distance of 89 miles; the second from Tabernash to Phippsburgh, 102 miles, and the third to the end of the line, 64 miles. One passenger train is operated each way daily for the entire distance, while freight trains are



A SECTION OF THE LINE ON THE WESTERN SLOPE

Approximately 90 per cent of the freight handled consists of coal originating in the vicinity of Mt. Harris and Oak Creek. This traffic aggregates up to 130 cars daily and could be increased considerably if the road was able to handle it. That from Mt. Harris, one of the largest shipping points, must be lifted 6,895 ft. and

run as the traffic demands, no freight trains being scheduled.

Consolidation, Mikado and Mallet locomotives are used in freight service, their size being limited by the wheel base permissible on the sharp curves on the 4 per cent line. The Consolidation engines which are em-

ployed in road service on the First district have a rigid wheel base of 15 ft. 8 in., and weigh 219,000 lb., exclusive of tender, with 195,000 lb. on the drivers. The Mikado engines, which are operated on the Second and Third districts, have a rigid wheel base of 15 ft. 9 in. and weigh 306,000 lb. with 232,000 lb. on the drivers. The Mallet locomotives which are used in helper service between Tolland and Tabernash have a rigid wheel base of 10 ft. and weigh 362,000 lb. with a weight on drivers of 332,000 lb.

From 5 to 8 freight trains are moved over the summit in each direction daily. Including helper engines and one passenger train each way this involves from 40 to 50 separate movements over the mountain daily and taxes the capacity of this section of the line and, therefore, that of the entire line.

With an average elevation of over 8,000 ft. and a

the sheds to such an extent as to endanger them. For this reason the sides are now built on a negative batter of 12 in. and the sheds are therefore 2 ft. wider at the top than at the bottom. Even this has not entirely removed the difficulty and it frequently becomes necessary early in the spring to cut through the sheds and remove some of the snow and ice on the outside to relieve the pressure.

To make them tight the sides of the sheds are built with two thicknesses of 1-in. plank with the cracks offset, while the roof is of 2-in. planks battened. The sealing of the sheds for the winter in this manner makes it necessary to provide some means for the escape of locomotive gases, particularly at Corona, where a considerable amount of switching is done incidental to the cutting out and turning of helper engines. Several plans for the ventilation of the sheds have been tried and a



A LINE DEVELOPMENT ON THE WESTERN SLOPE

maximum of 11,660 ft. severe winter weather conditions are to be expected. The total snowfall on the mountains throughout the year averages 64 ft., while temperatures of 40 to 50 deg. below zero are not unusual on the slope. At the summit the temperature rarely falls below 20 deg. below zero, but the winds blow continuously for days at a time at from 40 to 90 miles per hour. This not only fills the cuts, but drives the snow into the smallest crevices in the snowsheds. Instances have been reported where sufficient snow has entered the sheds through a nail hole to form drifts across the track 7 ft. deep. This necessitates the complete closing of even very small openings in the sides and top of all sheds during the winter.

Nine sheds are provided with a total length of 17,530 ft. for single track and 1,801 ft. for double track. The longest shed is at the summit at Corona and is 7,475 ft. long. These sheds are of timber construction and were built originally with vertical sides. It was soon found that the settling snow outside crowded in the base of

complete ventilation system with two 16-in. fans was installed a couple of years ago, although even this installation is effective only in the immediate vicinity of the fans. The variable direction and the intensity of the wind have made this problem one of unusual severity and particularly difficult of solution. In the summer the sheds are opened at the sides and top and triangular ventilators are also placed in the roof at intervals so that there is no trouble at this season. The necessity of sealing the sheds so completely in the winter makes it necessary for bridge gangs to spend approximately two months in the fall and one month in the spring closing and opening the sides and roofs of the sheds in order that the sun may melt the accumulation of ice and snow.

Occasionally trouble is encountered from sliding snow, but generally it is necessary to protect the line only from that which is drifting. Considerable trouble arises from ice, particularly in the snowsheds, requiring the use of flangers on all engines that pass through snowsheds and other points of trouble. Hydro-carbon and other com-

mon agencies for the removal of snow and ice have been found of relatively little value at these altitudes. Under normal conditions during the winter freight trains are run in fleets with a rotary snowplow ahead of each two or more trains. For this purpose two rotary plows are stationed at Corona throughout the winter. The frequent use of the rotary is necessary because of the rapidity with which the cuts drift full of snow. Even with the most aggressive work the line is sometimes blocked and it is then necessary to disregard all restrictions relative to hours of service, etc., until the blockade is lifted.

The severity of winter operating conditions is evidenced in no way more effectively than in the precautions which are taken to insure continuity of operation. A trainmaster is stationed at Corona at the first approach of winter and he assumes charge of all trains and snowplow movements on the mountains. Special men of long experience in the mountains are also taken from section gangs about November 1 and are stationed in pairs at houses at four or five particularly troublesome points on the mountainside throughout the winter. They remain on duty continuously throughout the winter subject to

master reporting to him is in charge of all track work on the entire line, while two roadmasters, working under his supervision, are in direct charge of this work, having jurisdiction over the Second and Third districts.

The normal season for current renewal work is from May 1 to November 1. On about the latter date the forces are reorganized on a winter basis. While approximately the same number of men are employed on maintenance work in the winter as during the summer, a considerable number are transferred from the more level to the mountain sections to assist in keeping that portion

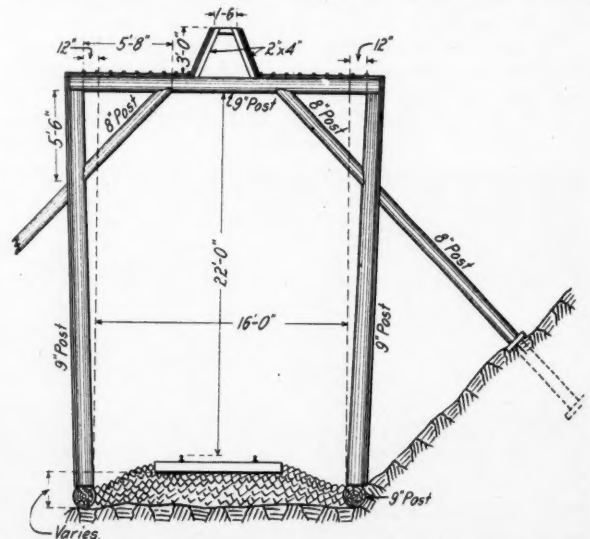


THE LINE IN GORE CANYON

call at any time and are in charge of the track about one mile each way from their headquarters. They are in telephone communication with Corona and are called before any trains are started down the mountains from the summit to ascertain that the line is open. They keep the trainmaster at Corona informed regarding the velocity and direction of the wind, the depth of snow over the rail, etc.

THE MAINTENANCE OF WAY ORGANIZATION

Maintenance of way work is conducted under the direction of the general superintendent. A general road-



A TYPICAL ELEVATION OF THE SNOW SHEDS

of the line open. The general roadmaster stays out in the mountains the greater part of the winter and is in immediate charge of track forces, transferring them from place to place as needed.

The severity of winter conditions is evidenced by the fact that, as stated at the beginning of the article, 18.7 per cent of all maintenance of way expenditures for the calendar year 1916 were chargeable to the removal of snow and ice; from October, 1916, to March, 1917, inclusive, 41.6 per cent of all expenditures were for this account and they were largely incurred on the 27.65 miles of 4 per cent line. Furthermore 54 per cent of all maintenance charges were incurred during the six winter months when no renewal work was under way and efforts were being directed solely to keeping the line open.

Track sections are from 5 to 10 miles long, depending on local conditions. Except between Tolland and Tabernash motor cars are provided for nearly all section gangs and also for bridge gangs, hand cars being used on the 4 per cent line. All classes of men are employed on track work, including some native Americans and a considerable number of Japanese. Of the track foremen about 15 are Japanese, a few are Greek and the remainder are Americans. The isolation and the hazardous work, particularly during the winter time, makes it especially difficult to retain men, although some men prefer work on the mountain section. Track walkers are employed during the day on all sections in canyon districts, which aggregate a large part of the line.

The track was laid originally with 80-lb. A. S. C. E. rail as far west as Steamboat Springs, while 85-lb. A. S. C. E. section rail was used on the extension to Craig. Six-hole angle bars were used between Denver

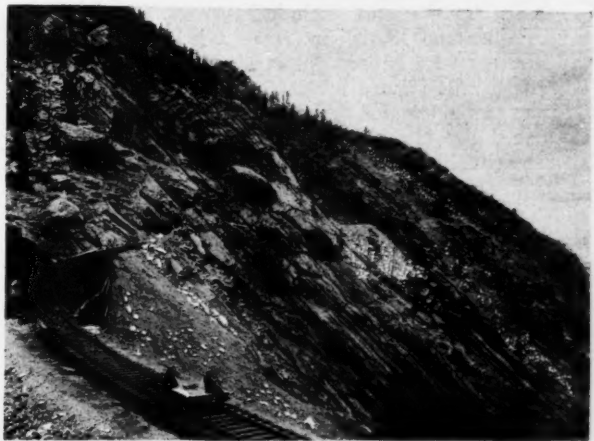
and Sulphur Springs, four-hole angle bars from that point to Steamboat Springs and continuous joints west to Craig. When relaying, 85-lb. rail and continuous joints have been used over the entire line. Tie plates are applied to all ties.

When relaying rail, it is curved with a gasoline-driven curver before being shipped out on the line. Jim crow rail benders are also carried by gangs on the line. In emergencies when no curved rails are on hand, rails are taken from bridge guards on curves (which are of the same section for this reason), which are then replaced at the earliest opportunity. Because of the wide extremes of temperature it is necessary to carefully consider provision for expansion when the rail is laid.

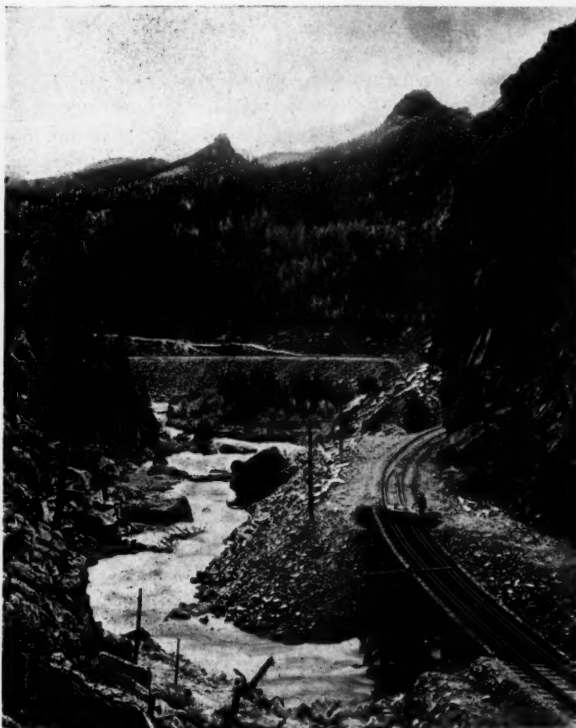
Oak ties now used to a considerable extent on curves, and mainly on the 4 per cent grades. In other places red spruce and lodge pole pine ties are used untreated. Of the two the red spruce makes the more satisfactory tie, but as only a limited number can be secured along the line they are reserved mainly for use on curves. The pine ties are used almost exclusively on tangents, as they are softer and have a life of only four or five years in track.

Bridge work is in general charge of a supervisor of bridges and buildings, who is responsible for the maintenance of all structures and tunnels on the entire line. Practically all of the bridges are of timber construction

to the general superintendent. With the exception of a deep well at the eastern terminus of the line at Utah Junction, all are surface supplies. The character of the water along the entire line is excellent and it is not necessary to treat it at any point. A number of the stations are operated by gravity. At those points where it is necessary to pump the water, steam plants are in service, although studies are now being made to determine the feasibility of substituting gasoline or electric power. The most severe pumping problem encountered on the line is at Corona, where it is necessary to lift the water 425 ft. The consumption at this point is also very



IN THE TUNNEL SECTION ON THE EASTERN SLOPE



HEAVY CURVATURE IN SOUTH BOULDER CANYON

with ballast decks to protect them from fire. All locomotives are also equipped with spark arresters and burn Colorado bituminous coal, so that relatively little trouble is experienced with fires. The bridge gangs are moved back and forth over the entire line in an effort to distribute the heavier and less desirable work between the gangs rather than assigning each gang to a definite territory.

The maintenance of water stations is under the direction of a foreman of water service who reports directly

heavy, particularly during the winter. The foreman of water service is provided with an assistant who maintains the gravity stations. As far as possible each pumper at a steam plant is in charge of two stations. Wooden tanks of 50,000 gal. capacity are standard over the line.

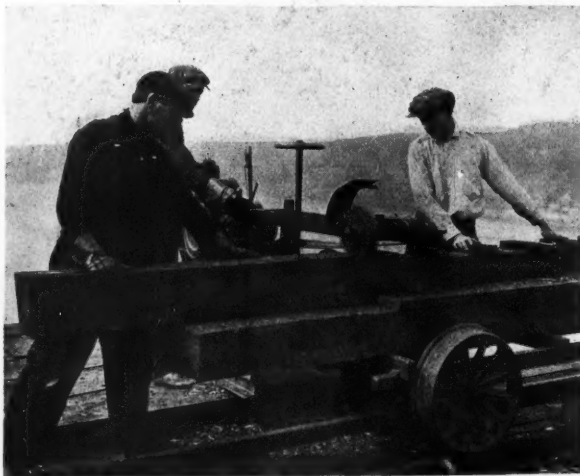
The extreme weather conditions over the summit makes necessary the adoption of an unusual expedient to protect the telegraph lines. For a considerable distance difficulty is encountered with sleet during severe storms. To prevent this from tearing the wires down an idler pole is inserted midway between each two poles carrying the wires. These idler poles carry no cross-arms, but the wires whip against them and knock the sleet off before it becomes sufficiently heavy to carry the wires down. An extra wire is also carried on the pole line near the ground for use if the others should go down.

The main problems in the maintenance of this line arise within the limits of the 4 per cent line between Tolland and Vasquez. At the time the road was built it was the expectation that the 4 per cent line would be only temporary to enable work to proceed on the western slope while a tunnel was driven through the main divide. Although this tunnel has been located definitely, it has not been possible to finance its construction up to the present time. The tunnel will be 6.04 miles long and its estimated cost is placed at \$6,000,000. The tunnel line will have a total length of 9.96 miles and will replace 33 miles of the present line and effect a net reduction in distance of 23 miles. It will eliminate all curves over 12 deg. and all of the 4 per cent grade, while it will lower the summit 2,432 ft. It will also eliminate all of the snowsheds and the severe snow troubles. From an operating standpoint it will release 25 engines at once and will double the capacity of the entire line.

SERVICE RECORDS WITH A TIMBER FRAMING MACHINE

THE REINFORCEMENT of the Poughkeepsie bridge over the Hudson river involved extensive reconstruction of the timber floor, and the framing which this required was greatly facilitated by the use of a portable framing machine. The main bridge was floored with new creosoted ties and the viaduct spans with second-hand ties cut off at both ends. The new ties are all 8 in. by 10 in., 1,447 pieces 12 ft. long and 1,564 pieces 16 ft. long were used. The reused ties, about 800 in number, are 8 in. by 16 in. The timber guard rails necessary for the work include 7,036 lin. ft. of 8-in. by 8-in. timber and 13,628 lin. ft. of 6-in. by 6-in. timber. All the ties were dapped for stringer seats and the timber guard rails framed for each tie.

The framing of this timber was done by machines like the one shown in the accompanying photograph. It consists essentially of a small gasoline engine mounted on a small truck having flanged wheels which run on a short section of narrow-gage track. Attached to this truck and extending some distance beyond the end of it



THE DAPPER IN USE ON THE BRIDGE

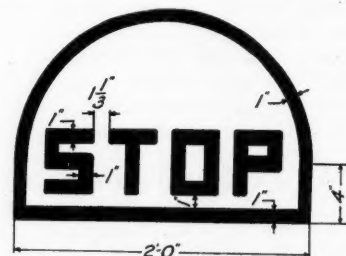
is an arm, the outer end of which is equipped with a revolving shaft, belt-connected to the gas engine. This shaft is fitted with a head onto which a circle saw or dado head may be attached for conducting sawing or dapping operations. This arm is hinged at its attachment to the truck and is provided with a screw adjustment, so that the elevation of the outer end may be altered readily. A lever attached to one of the wheels of the truck facilitates the movement of the truck forward and backward on its track and, therefore, the progress of the saw or dapper through the piece upon which it is operating. A further convenience is a second narrow-gage truck placed on a track at right angles to the first track to carry the timber upon which the cutting is being done. This greatly simplifies and reduces the labor of spotting the timber for the proper location of the cut.

The machine was utilized for sawing the ends of the reused ties as well as for dapping the ties and guard rails. It was operated by three men and was taken out onto the bridge, thus saving much of the labor that would otherwise have been occupied in moving the pieces to and from the machine. The guard rail pieces were 18 ft. long and the daps were 1 in. by 8 in. by 8 in. spaced 12 in. center to center. The time required to do the work

on one guard rail, including bringing the stick to the machine and taking it away, was 15 min. The two daps in the ties were 1 in. by 8 in. by 13 in. The best record on ties was 110 in eight hours or 4 min. 22 sec. per tie. The device is known as the Toohey timber dapper, which is manufactured by the National Concrete Machinery Co., Madison, Wis.

STANDARD HIGHWAY CROSSING SIGNS

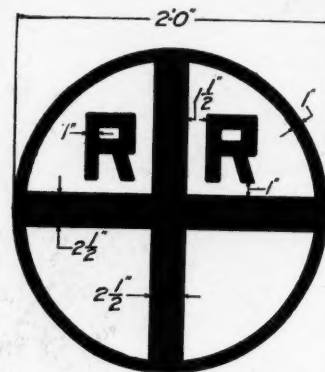
THE PUBLIC UTILITIES COMMISSION of Illinois issued an order on July 31 requiring the installation of special "stop" and "approach" signals at such highway crossings as may be designated by the commission as "extra hazardous." This order is in accordance with legislation passed last June requiring the railroads to



THE STOP SIGN

erect and maintain "stop" signs at highway crossings and the township highway commissioners to erect and maintain "approach" signs within 300 ft. of such crossings when so ordered by the Public Utilities Commission.

The "stop" and "approach" signs are the equivalent of home and distant signals for the protection of these crossings, the distant signal being designed to meet the conditions brought about by the higher speed of highway traffic at the present time. The provision of the law which puts the responsibility for these crossings on the



THE APPROACH SIGN

township highway commissioners or other highway authorities, results from the fact that these signals, to be effective, must be at such a distance from the railroad track that they will be outside of the railway right-of-way in nearly all cases. Another provision in this law prohibits the construction of any other signs or signals, such as advertising notices, within 300 ft. of any grade crossing, to prevent any possibility of confusion with the crossing protection signs.

The commission's order provides explicit specifications for both the "stop" and "approach" signs, the outlines and dimensions of which are shown in the drawings.

The signs are required to be of porcelain-enameled metal made of 16 gage iron, crimped backward at least $\frac{1}{2}$ in. around the perimeter. The letters are to be black on a white field and the rear of the sign is to be black. The supporting post may be either iron or wood and must be

of sufficient size and strength to make a solid and substantial support. The posts are to be designed to permit a bracket or attachment to be installed for the purpose of supporting a light or signal at night whenever in the opinion of the commission this may be necessary.

Increasing the Capacity of a Water Softener

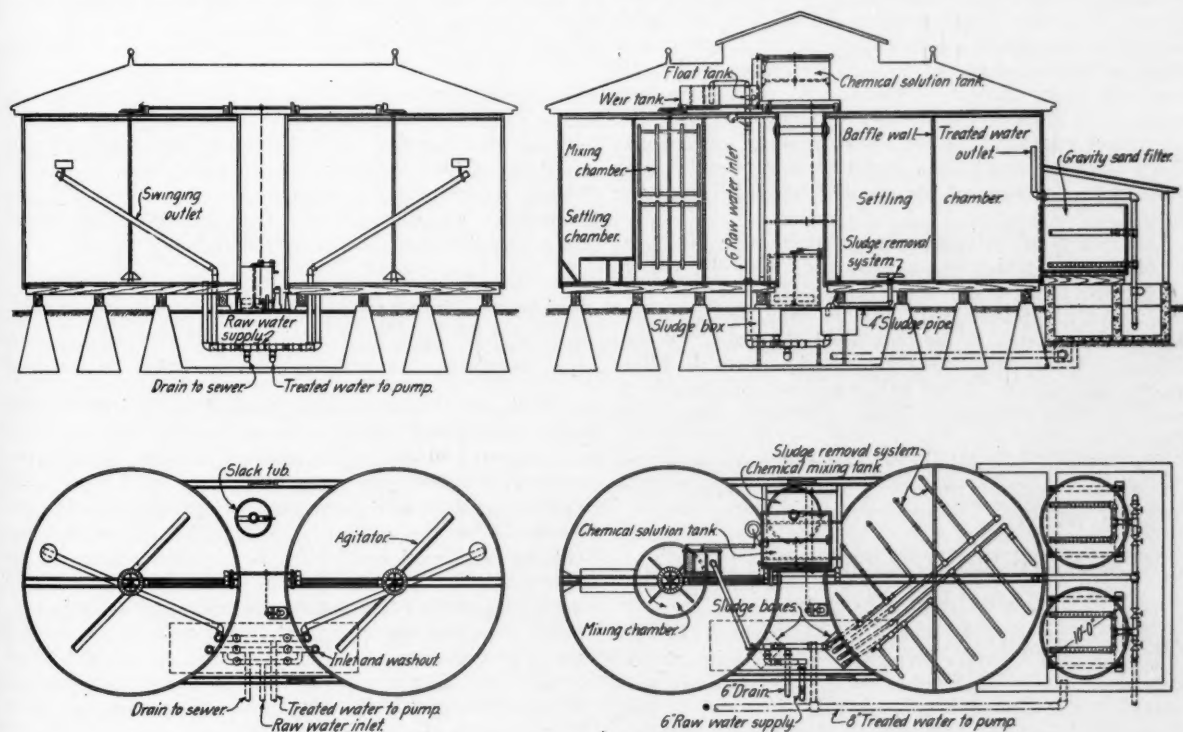
By C. R. KNOWLES

Superintendent Water Service, Illinois Central, Chicago

PREVIOUS TO 1907 the water used at the Waterloo, Iowa, shops of the Illinois Central was secured largely from two wells at the shops, although these wells did not furnish all the water required and it was necessary to purchase considerable water from the Waterloo Water Co. The waters from the company wells and from the city plant were both very hard, however, and caused a great deal of trouble and expense from scaling and other evils. In 1907 three additional wells were

from two hours to one hour and the capacity of the plant increased to about 14,000 gal. per hour. The consumption continued to increase, however, and in 1916 the capacity of the softener was again exceeded. Partly treated and milky water was pumped over to the roadside tank whenever the softener was operated in excess of its rated capacity.

Plans were then made to increase the capacity of the softener, but it was found impossible to install additional



PLANS AND ELEVATIONS OF ORIGINAL AND REVISED PLANTS

drilled and a water softening plant was installed. This softener was of the intermittent type with a capacity of 12,000 gal. per hour. This installation dispensed with the purchase of water from the city and the softened water eliminated much of the boiler trouble and resultant engine failures due to bad water.

The requirements for water increased from approximately 300,000 gal. per day in 1907 to over 400,000 gal. per day in 1915, which was far in excess of the rated capacity of the softener. By utilizing a 100,000 gal. reservoir for the storage of untreated water it was possible to use a surface pump from the reservoir in filling the treating tanks as well as the deep well pumps. In this manner the time of filling the treating tanks was reduced

tanks on account of the limited space. Moving the softener was practically out of the question on account of the heavy expense and lack of a desirable location; therefore, it was decided to leave the softener in the original location and increase the capacity by converting it from an intermittent to a continuous type softener.

The tanks are 25 ft. 6 in. in diameter with 18 ft. 6 in. staves, inside measurements, with a capacity of 71,000 gal. each or a combined capacity of 142,000 gal. By converting the plant to a continuous system it was found that the capacity could be increased to 35,000 gal. per hour and allow four hours settling time, or the same as the intermittent system. As before stated, the space was very limited, there being no room to the west, north or south

of the softener tanks and only a very limited space to the east which was utilized for the filters which were installed with the remodeled softener. This necessitated putting the chemical mixing tank above, supporting it on top of the two main settling tanks.

The original softener was typical of the average intermittent plant with two main settling tanks with agitators driven by bevel gearing from a shaft across the top of the tanks. The power to drive the agitators was furnished by a small steam engine, and the lime and soda ash were mixed in a small tank located on the ground floor, the chemicals being elevated to the settling tanks by means of a steam jet pump. The softened water was drawn off from the top of the tank through floating outlet pipes.

In remodeling the old plant practically all of the old material was utilized. The roof was raised over the center of the tanks to permit the installation of the chemical solution tank and the chemical feeding equipment on top of the tanks. A mixing chamber 8 ft. in diameter was installed in the west tank with agitators driven in the same manner and with the same shafting as formerly used with the intermittent system. Also the lime and soda ash are weighed and delivered to the solution tank with the same equipment as with the intermittent system. A baffle wall was constructed through the center of the east tank and sludge removal systems were installed in both tanks. The drain from the old softener was long and the course uncertain, so the sludge removal system was divided into three parts and each tank was provided with a sludge box to prevent the possible overloading of the drain.

The remodeled softener was equipped with filters, as the old system, which was not provided with filters, gave a great deal of trouble from milky water. The filter system consisted of two 10-ft. gravity sand filters located east of the softener in the only available space. A concrete clear water basin was constructed beneath the filters with a capacity of 13,000 gal., as it was preferable to pump from the clear water basin rather than direct from filters.

The work of rebuilding the plant and converting it to a continuous system was done by the International Filter Company, Chicago.

WOOD PRESERVATION STATISTICS FOR 1917

ACCORDING TO STATISTICS issued by the American Wood Preservers' Association in its proceedings for 1918, the total quantity of wood treated in the United States in 1917 by 115 treating plants was 137,338,586 cu. ft. as compared with 150,522,982 cu. ft. treated by 117 plants which were active in 1916. This represents a decrease of 13,184,396 cu. ft. or 8.7 per cent. There has also been a corresponding decrease in the treatment of railroad cross ties since 33,459,470 were subjected to preserving processes, or 4,900,898 less than the 37,469,368 reported in 1916. In the case of piles there was very little change in the amount treated, the total being 12,695,567 lin. ft., or only 4,700 lin. ft. more than in 1916. A greater increase is recorded for poles, 53,527 more poles being reported during the year than the total of 328,517 poles which was reported for 1916.

The quantities of preservatives used in the treating plants in 1917 amounted to 72,564,345 gal. of coal tar creosote, 2,977,392 gal. of water gas tar, 7,579,879 gal. of paving oil, 26,444,689 lb. of zinc chloride and 137,361 gal. of miscellaneous preservatives. These figures are

to be compared with 90,404,749 gal. of creosote and refined water gas tar, 26,746,577 lb. of zinc chloride, 5,675,095 gal. of paving oil and 582,754 gal. of miscellaneous preservatives. A comparison of the total consumption of creosote and zinc chloride in the years 1909 to 1917, inclusive, is to be obtained from the accompanying table.

CONSUMPTION OF CREOSOTE AND ZINC CHLORIDE

Year	Plants. Number	*Creosote. Gallons	Zinc Chloride. Pounds	†Other Pre- servatives. Gallons
1909.....	64	51,431,212	16,215,107	.....
1910.....	71	63,266,271	16,802,532	2,333,707
1911.....	80	73,027,335	16,359,797	1,000,000
1912.....	84	83,666,490	20,751,711	3,072,462
1913.....	93	108,373,359	26,466,803	3,885,738
1914.....	94	79,334,606	27,212,259	{ \$9,429,444
				{ 2,486,637
1915.....	102	80,859,442	33,269,604	{ \$3,205,563
				{ 1,693,544
1916.....	117	90,404,749	26,746,577	{ \$5,675,095
				{ 582,754
1917.....	115	75,541,737	26,444,689	{ \$7,579,819
				{ 137,361

*Includes coal-tar creosote and water-gas tar.

†Includes refined coal tar, corrosive sublimate, and carbolineum oils.

‡Statistics not available.

\$Paving oil.

The conditions brought about by the war have made it more and more necessary to depend upon domestic production of creosote. In 1917, 76 per cent of all creosote used in the United States was produced here.

The prices paid for preservatives has also advanced materially, as indicated by a comparison of the quotations for 1916 and 1917 tabulated below:

Preservatives	1916	1917
Coal tar creosote, per gal.....	\$0.075 to \$0.135	\$0.065 to \$0.23
Water gas tar, per gal.....		.047 to .08
Zinc chloride, 50% solution, per lb.....		.0285 to .075
Zinc chloride fused, per lb.....	.0325 to .095	.0625 to .085

Of the 33,459,470 crossties treated in 1917, 24,811,208 were hewed and 8,648,262 were sawed. The oak ties were treated in the largest number, constituting 40.2 per cent, with yellow pine second, comprising 34.5 per cent, and Douglas fir at 8.2 per cent. Creosote was the preservative in the case of 16,436,573 ties, while zinc chloride was used in 14,843,318. A combination of the two preservatives was used in 2,160,682, while 18,897 were subjected to treatment with miscellaneous preservatives. The average impregnation for creosote, water gas tar or paving oil was 7.95 lb. per cu. ft., for zinc chloride it was 0.46 lb. per cu. ft., while with the combination process it was 2.98 lb. per cu. ft. of creosote and 0.46 lb. per cu. ft. of zinc chloride.

In the case of piles, the principal woods treated were southern yellow pine and Douglas fir. The average impregnation for creosote was 13.83 lb. per cu. ft. and for zinc chloride, 0.69 lb. per cu. ft. The statistics given on poles include only those treated by either the pressure or open-tank processes. No account is taken of poles treated by the brush method. Impregnation with creosote averaged 12.23 lb. per cu. ft. and for zinc chloride, 0.50 lb. per cu. ft.

The preservation of construction timber, including bridge timbers, bridge ties and other heavy members aggregated 130,940,912 ft. b. m. or 848,310 ft. b. m. less than in 1916. Of the total 71,228,058 ft. b. m. were treated in the south coast region, yellow pine constituting by far the major portion of the material treated throughout the United States except in the Pacific coast region where it consisted of Douglas fir.

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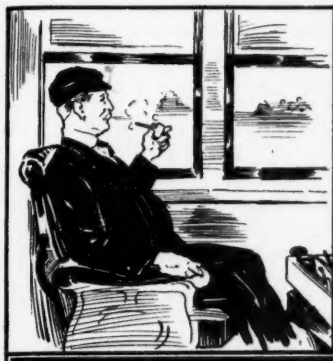
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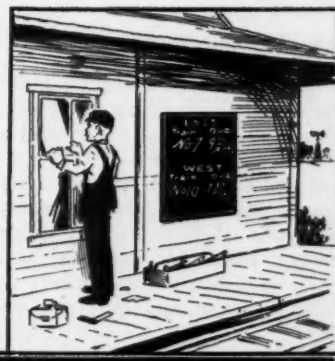
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REDUCING THE TIME OCCUPIED IN DOING THE SMALL JOB

Five Discussions of This Perplexing
Phase of the Work Done by the Bridge
and Building Department



THE BRIDGES AND BUILDINGS of a railroad are scattered over so wide an area that to do any work on them or even ascertain what work must be done, involves the expenditure of much time in traveling. This is as true with the small items of repair work as with the large renewal projects, but the minor repair jobs present a greater problem from the standpoint of the time lost in traveling because so large a proportion of the total time of the workmen is occupied in going from job to job.

Efforts to conduct this work in an efficient manner involve the consideration of the subject from many different angles. Means of transportation of both material and men, the organization and distribution of the work, expense allowances and many other problems must be considered. On this and following pages discussions of this subject are presented by five railway men with long experience in the bridge and building department.

THE WORK IS NECESSARILY SCATTERED

By GEO. W. REAR

General Bridge Inspector, Southern Pacific, San Francisco, Cal.

The thousand and one structures on a large railroad call for constant attention and repair, if they are to look as though somebody owned them. If they were all in the same town it would be quite a job to look after them, but, located as they are, scattered over hundreds of miles of territory, the size of the task is greatly increased. It is comparatively easy to organize forces to look after the larger jobs and perform the work with reasonable efficiency, but the little odds and ends of repairs here and there occupy more than their share of the supervisor's time, and there is a prevailing opinion that such work is unduly expensive and inefficient. Whether this is so or not depends on the methods used and the supervision given.

At the larger terminals there is sufficient work to keep a considerable force of men busy and if they are supervised by a competent foreman, good results will be obtained. The work may be scattered, with only a man or two in a place, but a good foreman can pick men who are willing to do a fair day's work and he can judge by the results how efficient they are.

In the writer's opinion, the greatest field for economy is in the proper delivery of the materials. A light auto truck would be a great help. What contractor would convey his tools and material about a city on push carts or similar primitive means? Yet, how many of our railroad terminals are provided with auto trucks for the quick transport of men and material? When a crossing gate is broken down it should be repaired quickly for the sake of safety. In how many cases is a truck available to take men and material to the job in a few minutes?

Other advantages of the auto truck will readily suggest themselves.

The second great field for economy is in leaving undone many jobs that are wholly unnecessary. Cupboards are built, shelves changed, windows are made into doors and doors into windows, to please the itinerant who happens to occupy the building at the particular moment, only to be changed back for the next occupant. It is true that the present scarcity of men has stopped much of this, but not all of it. Requests for such work should be investigated before authorization.

For work located at outlying stations it is not so easy to suggest economies. Much work must be done quickly. Glass is broken and must be replaced. A self-respecting railroad cannot use an old straw hat to repair a broken window. Other repairs are required, but most of them can wait until it is convenient to do them. It has been suggested that these little jobs might be contracted or given to some local jobber. This might work well in a few cases, but a large proportion of the jobs are located in small communities where such men are not available. Again, each railroad has standard colors and styles of work and the farming out of the work would soon result in a variegated appearance.

As the railroad must be prepared to do much, if not most of its work, it would appear best to do it all as a regular thing, and the field for economy lies in the methods used. In many cases a man will have to travel several hours to do a few minutes' work, but if the work is necessary and urgent, there is practically no other course, and it must be accepted as one of the penalties of its location. Even if a man does travel a hundred miles to do a half hour's work, it would be cheaper than to have some man travel the same distance to hire someone else to do it. Of course, work should be organized so that as many little jobs as possible can be done on one trip. Here again a difficulty arises. It is not customary for railroads to pay the traveling expenses of men engaged in such work and it is impossible to get good men to stay away from home and pay hotel bills. This is sometimes provided for by allowing extra time or a higher rate per day, but there is every reason to believe that allowing a fair traveling expense would cut the lost time down considerably.

To take care of these little jobs we should have a jack of all trades who can make a fair job of any of the building trades. Such men are quite common in bridge and building organizations, and this kind of work should be given them as a token of the confidence in which they are held. These men will not loaf on the job, but take pride in their work the same as the supervisor himself. These men can also take care of the usual run of small jobs that are not urgent and should be

given a suitable amount of help. Usually two men working together can do more than they can working separately.

The matter of traveling expense is sometimes taken care of by furnishing these men with a car in which they can live and carry a small amount of material, and this works particularly well in the sparsely settled western and southern territory. Under this arrangement the small gang moves from place to place, doing all the odds and ends of work as they proceed. They are then always available for emergency work.

If furnished with a motor car they can do work between stations and often do several small jobs in one day.

If we accept this as the most feasible method of doing the work, economies can be worked out in the supply of material. One of the constant sources of unnecessary traveling is that of not having proper material when a man gets to a job. In the case of broken glass in stations, the agent usually sends in the dimensions, but only rarely does he get it right, with the result that the workman arrives on the job and is unable to do the work or he may find other work requiring only a very small amount of material. If he were authorized to purchase this locally, supervised by the agent or some other employee, many small jobs could be done at little expense. Practically all railroads will trust an employee with valuable material after someone else has purchased it, but will not trust him to buy a few cents' worth of material where it would save dollars. Many employees make small purchases of a pipe fitting, hinges, locks, screws, etc., and pay for them out of their own pockets to save coming back to a job. These traveling carpenters or mechanics can be of great service in acting as fire inspectors, examining and repairing stoves, pipes, wiring, etc.

Briefly—the efficiency of handling these small jobs consists of having good, faithful, loyal men and in giving them a chance to do the work in an economical way. Put the responsibility up to them the same as it is put up to foremen and supervisors, and good results will be obtained. Men who are in line for promotion to foremen or men who have been foremen are best for this work and they should not be kept at it more than a year or two, except in occasional cases where men can do this work well but for one reason or another are not fitted for heavier work.

DIVIDE THE JOBS INTO CLASSES

By E. M. GRIME

Supervisor of Bridges and Buildings, Northern Pacific, Dilworth, Minn.

The officer in charge of the bridge, building and water supply department has necessarily a large number of small details to attend to. Not the least of these is a multitude of small repairs requiring in most cases but a few hours, or even less of a competent man's time, and it is often quite a problem to get the man to the work and back again without losing an amount of time entirely out of proportion to the importance of the work. Like many other features of railway maintenance work, strict economy is a condition usually impossible of attainment due to the nature of the work and its distance from headquarters, and this is especially true of work on branch lines where train service is infrequent.

In view of this it is desirable to divide the work as far as practicable into classes, educate a few men as specialists in each class, have a definite time for handling each class of work, and by grouping it together in

this way eliminate most of the lost time due to traveling or waiting for trains. I have found it very satisfactory to group general repair work into a number of different classes.

Repairs to Brick Chimneys and Plaster. Assign two outfit cars for the use of a reliable man who can do plastering and brick laying and give him a helper. Fit up one of the cars with bunks and a stove so the men can use this car to live in and use the other car for such material as lime, cement, plaster, flashing tin, chimney thimbles, sand and necessary scaffold planks, ladders, etc. The work having been previously inspected, the mason is given a lineup of all the work required and he then moves over the division from place to place, cleaning up all of this class of work. He figures his own moves back and forth on the way-freights so as to move at the most opportune times. When the line has been gone over once during the year in this manner, little, if any, further work of this kind will come up for at least another twelve-month period and each job has been attended to at a cost far less and in a more satisfactory manner than if it had been handled by a local mechanic under a contract.

Repairs to Stoves, Stove Piping and Heating Plants. Aside from such minor repairs as a broken door or other parts which the agent can repair himself when the new part is furnished, this class of repairs can be handled during the late summer and fall. The necessary repair parts having been shipped out to the points required, four men are sent over the line on a motor car. They stop at each point, lift the stove and piping bodily from the building and deposit it on the right of way where the ashes can be dumped out and the stove taken apart, if necessary. New parts are applied, the pipe cleaned, the stove reset and the pipe wired back in position, the whole operation usually requiring not to exceed 30 min. Heating plant repairs requiring more or less steamfitter's work are handled during the summer, as convenient, by the water service men in connection with their regular work on water stations.

Plumbing Repairs. This class of work is a little more difficult to handle and emergencies sometimes make it necessary to hire local talent, but as a rule most troubles are easily fixed by a resourceful water service foreman in the course of his regular work. Repairs to stock yard and section house water supply are handled by the water service foreman and if looked over occasionally in connection with regular water station work require very little emergency repairs.

Repairs to Depot Platforms. On a well maintained property, emergency repairs are seldom required, but occasionally a plank will be broken. In this case a piece of the proper size can be shipped from headquarters and placed by the track forces at minimum expense.

Repairs to Window Glass, Door Locks and Knobs, Money Drawers, Loose Bolts in Bridges, etc. On every division there is a real need for a traveling inspector to be continually on the road and it should be his business to make the above repairs in the regular course of his work, thus eliminating any special trips for carpenters to handle this class of work.

As a general rule the best way to take care of small repairs is to eliminate them almost entirely by maintaining the property in good condition and making sure that each regular crew, when at a station for work of some consequence, covers everything likely to come up for repairs at that point within the next few months. A screw replaced, a bolt tightened or a plank railed today may save a new article next week at a hundred times the cost.

REQUIRES PERSONAL ATTENTION OF THE SUPERVISOR

By B. F. PICKERING

Supervisor of Bridges and Buildings, Boston & Maine, Salem, Mass.

First in importance is the foreman himself who has charge of the men. When two or more men are to be sent out, he will place one man in charge of the work, not necessarily the same man in charge of each different job, but will choose several men of merit and ability, and place them in charge in regular order. This will accomplish several purposes. It will establish a friendly rivalry between the men in the rapid completion of their jobs; it will also qualify them to some extent for greater responsibilities and it will have a tendency to eliminate the jealousies which are found so often in crews unwisely managed.

The supervisor himself may help along these lines very much. As he goes from place to place and sees these small gangs in progress, if he is as experienced as he should be, he will ascertain which man is in charge, not necessarily by inquiring direct, but by asking questions that will reveal the situation to him. He should then spend some little time in conversation with the man in charge about the details of the work, not to give any orders to change the work from the foreman's plan (as all such orders should be given through the foreman), but to acquaint himself with the man's ability and encourage him by talking about his work. This will bring a two-fold benefit. The man will be spurred to do his best and the men working with him will also be encouraged to improve their methods, so that at some later time they may have a similar opportunity to talk with the supervisor. All this seems of little consequence, perhaps, and yet it has a very essential bearing on the manner and economy with which the work is done in the end.

Again, the foremen in charge of these various gangs should be men who are as ready to commend when work has been well and economically done as to condemn if the contrary were the case. A little judicious praise when a man has done well will accomplish very much.

Another method of doing these small jobs is by a system of local contracting. This is not very satisfactory as a rule and is definitely impractical in some cases. However, considerable contracting is done in this way on this division. The division foreman looks over the work, gets bids from two local contractors and then determines whether they will do the work more cheaply than the railroad force could do it, considering the time the men must spend getting to and from the work. If this is more economical this course is followed, but contract work is seldom as satisfactory as work done by our own forces.

There is still another method which works out to very good advantage, especially on territory far removed from local crew headquarters. This is to have the work done by small boarding car crew. If a job is large enough to take the time of four or five men for a week, it can usually be done enough cheaper by men immediately on the ground to pay the expense of moving the outfit and the interest on the investment for equipment. Oftentimes there are several such small jobs in the vicinity of a larger one so that they can be handled more economically by men working on the large job than by men sent from a local foreman's headquarters. The matter of train service enters to a great extent and on some territories where local train service is very poor it may be economical to maintain a motor car at the local fore-

man's headquarters so he can send out two, three or four men and do a great many of these small jobs.

There is still another method employed in some sections where local trains are very few and far between. The men ride to and from the work on the electric cars, and it proves economical to pay their fares for this transportation and thus save time in their getting to and from the work.

TRAVELING EXPENSE ALLOWANCES WOULD HELP

By E. L. LOFTIN

Supervisor of Bridges and Buildings, Alabama & Vicksburg, Vicksburg, Miss.

The small repair jobs constitute a class of work that requires a great deal of thought and intense application if good results are to be obtained. This work is usually done by one or more men that are classed as road carpenters, handy men or line men, who should have some knowledge of several trades. The work coming in this classification includes the repair of mail cranes, train order signals, small and varied repairs to all kinds of buildings, bridge warnings, right of way gates, road crossings, derrails, standard track signs, track scales, depot scales, wells, cisterns, pumps, water pipes, plumbing, tin work, drainage, unloading and checking or shipping small lots of material, assisting brick masons where carpentry is necessary, repairing interlocking plants and safety crossing gates, adjustable cradle and feather points at river incline, repairing office furniture and many other small jobs.

Local conditions along the road and the facilities at hand will govern the success of this kind of work to a large extent. A schedule, or line-up, for such work will not apply equally to all railroads. Where fittings and repair parts are at hand for various kinds of jobs, the work should move along smoothly with a well planned schedule worked out by the supervisor and the men doing the work. This can best be done by close observation, when passing over the road, of all little things that need attention, and by mapping out the work from information thus obtained with the carpenter in order that he may have a live working schedule at all times. It is well to consider the location of the work, schedule of trains, cost of living at the different places along the line, etc., in order to accomplish the best results. It may be necessary to double some of the stations and work back to carry on the work to advantage.

Board and lodging is also one item to consider and as a rule the carpenter is not allowed sufficient expense money to carry him through without drawing on his private funds. Here is where he is liable to "play his hand" and look for cheap lodging by traveling from one place to the other at the railroad's expense.

Time is often lost through failure to provide material for the various little jobs. This is a matter that both the supervisor and the carpenter should discuss frequently. In instances one finds that the particular kind of material needed is not at hand and as it cannot always be carried in a baggage car it must go by freight. Until it arrives other near-by small jobs should be worked on.

Experience has been gained with a material car stocked with various kinds of material and moved along with the work, but it is not a great success, because the car inevitably becomes a junk shop, so that everything in it must be moved to find the thing wanted. Train men also have a special dislike for handling the car. The best plan is to ship small things in the baggage car and have the larger material go by freight.

The road carpenter should make a daily report to the supervisor and state the kind of work he is doing, where he expects to be the following day, and what he will do. Regular bridge and carpenter gangs as a rule are inclined to overlook small jobs in working over the road. These gangs should also be drilled in the importance of the small jobs and encouraged to help the "small job man" along.

CONTRACTING GENERALLY IMPRACTICABLE

By C. A. LICHTY

Purchasing Department, Chicago & North Western, Chicago, Ill.

Considerable may be said on both sides of the question of having small jobs on a railroad done by the contract method or by local parties. In the first place there are many of the smaller stations on some roads where local help is not available and where all classes of maintenance work must be done by the regular company forces. Maintenance items, such as repairs of money drawers and locks, door locks and checks, stock and track scales, mail cranes, stoves, furnaces, etc., can be done better by the regular maintenance forces than by the contract method or by local parties, and where such work is properly supervised and systematically done there will be little or no occasion to call for repair men except for special work, and barring unusual accidents and emergencies.

Railroads purchase their own materials (for obvious reasons) and by the time it is disbursed for small jobs the making of arrangements for the work to be done by local parties, with the proper inspection and return of material left over, etc., usually causes more bother and is more expensive than to have the work done by a regular maintenance man or crew. Regular maintenance crews, when going over the road with their outfits, usually carry sufficient material with them to do all ordinary repair work, and when they complete their work it is done in accordance with the company's standards. Many contractors, more especially those in larger places, hire union men and they are therefore compelled to send a separate man for each classification of work, whereas the ordinary maintenance crew has men that will do any or all of the ordinary jobs that require attention about a station.

This subject has received considerable attention on a number of roads, some of them finding the method satisfactory to a degree, others finding it impractical, depending largely on local conditions. Many roads are having car repair and shop work done on a piecework basis which generally works out to the advantage of both the employee and the employer, and some roads have practiced to some extent the letting of small jobs by contract to their own bridge and building crews during periods when the pay rolls are cut to the minimum.

The up-to-date supervisor will locate his men to the best advantage with the view of getting them over the road with the least amount of travel and the minimum loss of time, and should see to it that the men do not run about promiscuously, doing jobs here and there in a haphazard way, leaving some work undone for another trip, but doing all that is necessary at any one station so as to leave everything in a condition that will make it unnecessary to send a man to the same place again for months or until the next regular visit of the maintenance crew. By a careful study of conditions he will soon be able to determine which, if any, of the work on his division can be handled to advantage by the contract method or by local parties, and can then arrange to do the work most economically.

THE MAINTENANCE OF WAY CONVENTIONS

THE PROGRAM is now practically completed for the thirty-sixth annual convention of the Roadmasters' and Maintenance of Way Association, which will be held at the Auditorium Hotel, Chicago, on September 17-19 inclusive. The officers and members of the executive committee are making every effort to present a program which will be of the maximum value to the members in meeting the problems now confronting the track department. The keynote of the meeting will be "keeping the tracks in proper condition as an aid in winning the war." The attention of the United States Railroad Administration has been called to this convention and R. H. Aishton, regional director of the northwestern region, in whose area the meeting will be held, has recommended to the director of the division of operation at Washington that the attention of all regional directors be called to this meeting and that they be urged to have a full representation of their roadmasters at this meeting. In addition to the program which is printed below it is expected that an officer of the Railroad Administration will speak on the importance of the scrap pile and the necessity of keeping all usable materials out of it.

All entertainment for the roadmasters and members and their families will be eliminated this year. The annual banquet on Wednesday evening will be replaced by a war dinner at which a number of prominent railway men will speak on the problems of the maintenance of way department. The program is as follows:

First Day—Material Day

Opening exercises.

President's address.

Report of Committee on Reclamation of Track Materials.

Paper—Common Defects in Rails and Means of Detecting Them in Track; Chas. W. Gennett, Jr., manager Rail Inspection Dept., R. W. Hunt & Co.

Report of Committee on Fences, Cattle Guards and Farm Crossings.

Tuesday Evening

Moving Pictures of Labor Saving Devices in Track Work.

Second Day—Labor Day

Round Table Discussion of Labor Conditions.

Address—"What the government is trying to do for the railway track labor situation," by M. G. Kibbe, in charge of the railway division, United States Employment Service, Chicago.

Report of Committee on Labor Saving Devices.

Paper—"Methods of Purchasing and Inspecting Ties and the Outlook for an Adequate Tie Supply," by John Foley, forester, Pennsylvania Railroad and associate manager of the Forests Products Section, Central Advisory Purchasing Committee, United States Railroad Administration.

Third Day

Committee Report—Best Methods of Raising Track.

Business Session—Election of Officers, etc.

The Track Supply Association is completing its plans for one of the largest exhibits which it has ever presented. Practically all of the space has been assigned. Forty-five firms have already made arrangements for exhibits, and the display this year will embrace a number of new features, making the materials on exhibit more readily accessible for inspection than heretofore.

The following firms have already made arrangements to exhibit:

Air Reduction Sales Company, New York.
American Hoist & Derrick Co., St. Paul, Minn.
American Steel & Wire Co., Chicago.
American Valve & Meter Co., Cincinnati, O.
Anchor Company, New York.
Bethlehem Steel Company, Bethlehem, Pa.
Carbic Manufacturing Company, Duluth, Minn.
Chicago Malleable Castings Company, Chicago.
Crerar Adams & Co., Chicago.

Duff Manufacturing Company, Pittsburgh, Pa.
 Fairbanks, Morse & Co., Chicago.
 Fairmont Gas Engine & Railway Motor Car Co., Fairmont, Minn.
 Frictionless Rail Company, Boston, Mass.
 Hayes Track Appliance Company, Richmond, Ind.
 Hauck Manufacturing Company, New York.
 Ingersoll Rand Company, New York.
 Kalamazoo Railway Supply Company, Kalamazoo, Mich.
 Lackawanna Steel Company, Buffalo, N. Y.
 Luther Grinder Manufacturing Company, Milwaukee, Wis.
 Madden Company, The, Chicago.
 Milburn Company, Alexander, Baltimore, Md.
 Mudge & Co., Chicago.
 National Lock Washer Company, Chicago.
 National Malleable Castings Company, Cleveland, O.
 National War Savings Committee.
 P. & M. Co., Chicago.
 Pocket List of Railroad Officials, New York.
 Positive Rail Anchor Company, Marion, Ind.
 Q. & C. Co., New York.
 Rail Joint Company, New York.
 Railroad Supply Company, Chicago.
 Railway Review, Chicago.
 Reading Specialties Company, Reading, Pa.
 Ramapo Iron Works, Hillburn, N. Y.
 Sellers Manufacturing Company, Chicago.
 Simmons Boardman Publishing Company, Chicago.
 Southern Ry. Supply & Equipment Co., St. Louis, Mo.
 Templeton, Kenly Company, Ltd., Chicago.
 Track Specialties Company, New York.
 Union Switch & Signal Co., Swissvale, Pa.
 Verona Tool Works, Pittsburgh, Pa.

Wharton Jr. & Co., Inc., Wm., Easton, Pa.
 Wyoming Shovel Works, Wyoming, Pa.
 Ajax Forge Company, Chicago.
 Brown, M. H., New York.
 Carnegie Steel Company, Pittsburgh, Pa.
 Cleveland Frog & Crossing Co., Cleveland, O.
 Creepcheck Company, The, New York.
 Elliott Frog & Switch Co., East St. Louis, Ill.
 Balkwill Manganese Crossing Company, Cleveland, O.

THE BRIDGE AND BUILDING CONVENTION

The American Railway Bridge & Building Association will hold its twenty-eighth annual convention at the Hotel Sherman, Chicago, on October 15-17 inclusive. Reports which have already been received from the committees indicate that a program of more than usual merit will be presented. These reports will be supplemented by individual papers on current problems by prominent railway men. The convention will partake of war-time activities, entertainment being curtailed and emphasis being placed upon the problems confronting the bridge department today.

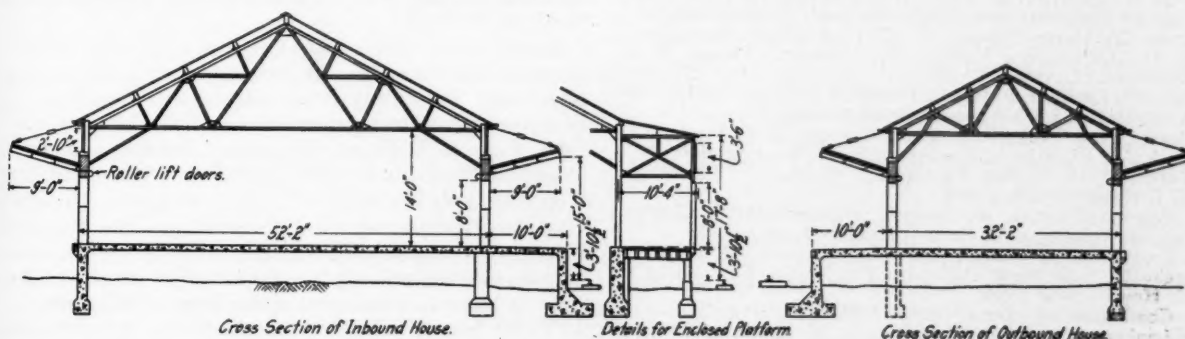
The Maintenance of Way Master Painters' Association convention will be held in Chicago on October 15-17 inclusive. This association is also making plans for its annual meeting, which will dwell particularly upon the problems now confronting this branch of the maintenance of way organization.

Advantages of Standardized Buildings

CONSIDERABLE INTEREST has been taken in the possibilities of rapid building construction demonstrated by the Austin Company of Cleveland, O., with the use of a system of standard buildings for industrial purposes. Through this system many buildings of considerable size have been completed in 30 days, more elaborate ones in 60 days and multiple story mill

authorized, thus saving the time ordinarily occupied by the fabrication of the structural steel.

The organization is, of course, trained and experienced in the erection of this particular class of structures—especially in the assembling of detailed features, many of which are duplicated in the various designs. As a result the men know exactly what to do and in a large



construction and concrete buildings in a somewhat longer time. The main fact is that a record of long duration has been established for the completion of all work undertaken according to schedule.

Organization and systematic methods are, of course, responsible for a considerable measure of this success, but the foremost element is a system of standard building designs which not only possess a flexibility of size and proportions that insures adaptability to a great many purposes and locations, but which also permit of the fabrication of stock members in advance of the awarding of contract, since they may be used interchangeably in a great many of the designs. As a consequence large stocks of standard columns, trusses, purlins, etc., are kept in readiness to be shipped immediately after any work is

measure can be directed according to pre-determined schedules from day to day which ordinarily vary but little on the different jobs. The same applies to the billing and assembling of material. There is much less opportunity for delay because of the failure to provide a certain class or kind of material than in the case of work done according to a special design.

The designs follow accepted practice in industrial building construction as to arrangement, structural design and detail and with opportunity for sufficient variation to meet any usual needs. Thus the industrial building designs include buildings with flat roofs, pitched roofs, saw-tooth roofs and monitors. There are also designs with main center aisles and side aisles, the main aisles affording accommodations for various lengths of

traveling cranes. There are also mill construction and reinforced concrete designs.

For application to such railroad buildings as car repair shops, forge, boiler or wheel shops, practically no departure from the standard designs is necessary. For locomotive erecting shops, machine shops, roundhouses and freight houses, on the other hand, special railroad standards have recently been devised. In the case of the locomotive erecting shop, the modification has consisted primarily in provision for an aisle wide enough to accommodate the traveling cranes used in handling locomotives.

The drawing illustrates the type of structure developed for the application of this system to freight houses. This consists of a steel frame with brick curtain walls supported on a concrete foundation. The floor is also of concrete supported on an earth fill, although the wearing surface may be made of any other desired material without modifying the original design. The width of the

houses, adopted after a careful study of the plans obtained from many railroads and of the recommendations of the American Railway Engineering Association, have been made 32 ft. 2 in. for the outbound house and 52 ft. 2 in. for the inbound house, measured out to out of walls.

To meet the wishes of those who desire to have trucking on the track side done entirely within the building an alternative design has been prepared in which this trucking platform is covered by a cantilever frame from which continuous sliding doors are suspended along the edge of the platform. Thus trucking is done from the cars directly to the inside of the house while retaining the advantage of having the columns set back away from the cars. The architectural treatment of the ends of the building or any other portions that lend themselves to this purpose may be modified as desired to bring the structure into harmony with the architecture of other structures in the vicinity.

R. B. A. Studies Selling to Government

A REORGANIZATION of the Railway Business Association to meet the new conditions was accomplished by the general executive committee at the regular quarterly meeting in New York June 19. The officers selected were as follows:

President—Alba B. Johnson, Philadelphia, president of the Baldwin Locomotive Works.

Honorary Vice-President—Geo. A. Post, New York, president of the Standard Coupler Company.

Vice-Presidents—Walter H. Cottingham, Cleveland; W. B. Leach, Boston; E. B. Leigh, Chicago; J. C. Bradley, Buffalo; Robert F. Carr, Chicago; A. L. Humphrey, Pittsburgh, and G. W. Simmons, St. Louis.

Executive Members—S. P. Bush, Columbus; W. E. Clow, Chicago; J. S. Coffin, New York; S. M. Curmen, Philadelphia; Otis H. Cutler, New York; Henry Elliot, East St. Louis; Andrew Fletcher, New York; Howard A. Gray, Chicago; Irving T. Hartz, Chicago; F. T. Heffelfinger, Minneapolis; H. H. Hewitt, New York; J. M. Hopkins, Chicago; A. M. Kittredge, Dayton; Charles K. Knickerbocker, Chicago; Frank J. Lanahan, Pittsburgh; Stephen C. Mason, Pittsburgh; A. H. Mulliken, Chicago; Randolph Ortman, Chicago; W. G. Pearce, New York; F. A. Poor, Chicago; S. F. Pryor, New York; W. W. Salmon, Rochester; H. H. Westinghouse, New York; W. W. Willits, Chicago; J. M. Hansen, Pittsburgh; E. J. Kearney, Milwaukee.

Secretary, Frank W. Noxon; treasurer, M. S. Clayton; executive assistant, P. Harvey Middleton.

Committee on Finance and Administration—H. H. Westinghouse, New York, chairman; J. S. Coffin, New York; H. H. Hewitt, New York.

Committee on Government Purchasing Policies—A. L. Humphrey, Pittsburgh, chairman; A. H. Mulliken, Chicago; Samuel G. Allen, New York; Robert F. Carr, Chicago; Andrew Fletcher, New York; Howard A. Gray, Chicago; Irving T. Hartz, Chicago, and Charles K. Knickerbocker, Chicago.

Committee on Railways After the War—W. W. Salmon, Rochester, chairman; A. H. Mulliken, Chicago; J. C. Bradley, Buffalo; E. B. Leigh, Chicago; Stephen C. Mason, Pittsburgh; W. G. Pearce, New York, and H. H. Westinghouse, New York.

Committee on action—A. H. Mulliken, chairman; A. L. Humphrey and W. W. Salmon.

GOVERNMENT PURCHASING POLICIES

The government is inserting the following paragraph in the contracts which it is requiring the companies to sign from whom it is buying railway supplies:

"The contractor expressly warrants that he has employed no third person to solicit or obtain this contract in his behalf, or to cause or procure the same to be obtained upon compensation in any contingent, in whole or in part, upon

such procurement; and that he has not paid, or promised or agreed to pay, to any third person, in consideration of such procurement, or in compensation for services in connection therewith, any brokerage, commission or percentage upon the amount receivable by him hereunder; and that he has not, in estimating the contract price demanded by him, included any sum by reason of any such brokerage commission or percentage; and that all moneys payable to him hereunder are free from obligation to any person for services rendered, in the procurement of this contract. He further agrees that any breach of this warranty shall constitute adequate cause for annulment of this contract by the United States, and that the United States may retain to its own use from any sum due or to become due thereunder an amount equal to any brokerage, commission or percentage so paid, or agreed to be paid.

"And no person shall be received as a contractor who is not a manufacturer of or regular dealer in the articles which he offers to supply."

The Railway Business Association called this to the attention of its members at once, and the Committee on Government Purchasing Policies sent a letter to Thomas W. Gregory, attorney-general of the United States, and John Skelton Williams, director of finance and purchases of the Railway Administration, from which the following is abstracted:

"A large proportion of the members of the Railway Business Association either employ sales agencies on contingent commissions or are themselves employed by manufacturers as contingent commission sales agents.

"In the hope of affording the government practical aid in framing a definition, we have endeavored to compile facts of the business situation by gathering statements from our members as to their practices. Manufacture in its present-day form consists of two fundamental and interdependent functions: (1) making and (2) selling. Some manufacturers—probably a majority—have, broadly speaking, two departments, a manufacturing and a selling department—the latter consisting of an organized selling force usually giving all its time to the company and compensated for the most part on a basis which includes a percentage commission on the amounts receivable from the goods sold. Many manufacturers who have organized sales forces of their own conduct the entire business on a commission compensation with no salary factor.

"There are many manufacturers who market the whole or a part of their output through mechanism which is not

a part of their own organization. There are two principal forms of such outside mechanism.

1. Regular organized selling firms or companies whose business is exclusively that of selling the output of one or more manufacturers in a common field, the lines being non-competitive.

2. Brokers or commission men in local markets or areas throughout the country who act for a manufacturer upon his motion in a particular matter or who may initiate and submit to the manufacturer a tentative order or contract for goods.

"The manufacturer may maintain a salaried selling organization of his own, in many instances depending also upon one or the other of these two forms of outside selling mechanisms—the authorized agent or the broker—to get orders or contracts for his product, particularly in new territory or in dealing with customers more or less unknown to the manufacturer. Thus it is plain that the payment of commissions contingent upon the amount of sales or upon the price obtained or upon both is characteristic of a wide range of business transactions, both those conducted by companies which maintain their own sales forces, and those conducted through independent agencies either regularly appointed for specific territory or acting as occasion arises. The manufacturer often adapts himself to conditions, using his own sales staff in territory where this seems to be the most serviceable method, and employing sales agencies in other territories.

"What chiefly, we assume, concerns the government is the question whether in a given transaction the payment of a contingent fee has served to increase the cost of the goods to the government. It appears from statements made by a number of our members that the commissions paid to sales agents are in lieu of a stated amount in the shape of salary and expenses. Out of such compensation the agency maintains offices and defrays traveling expenses besides salaries of representatives who do the work. The government in many instances owes the existence of some purveyors and hence of competition to their using agencies, since the limited size of the business would preclude the employment of salaried men covering the whole country.

"The smaller selling cost made possible by the contingent fee system arises out of the fact that the commission agent has other principals and usually concentrates in a certain territory. A clear-cut proof that the contingent fee method need not of itself increase the price to the buyer is found where a company has a salaried salesman in one territory and commission agents in another, while its price quotations are the same for all regions.

"A preponderant volume of transactions between manufacturers and the railways, including central purchases at Washington and regional purchases by individual roads, is conducted by parties among whom there are no strangers. If a sales agent whose compensation is in the form of a contingent fee is usually the representative of a given manufacturer, everybody concerned, from the chairman of the Central Purchasing Section down to the local storekeeper on the railroad, knows all about him—who he is, why he is there, and what factor his activities will be and ought to be in the negotiations. In this respect railway purchasing is doubtless quite different from government purchasing in a wide sphere of other departments to which the warranty covenant has been recommended by the Department of Justice."

The assistant attorney general advised in reply that the warranty covenant does not permit of any exception

in the matter of paying commissions to brokers for procuring government contracts.

DELAY IN PAYMENT OF BILLS

Tardiness by individual railroads in paying bills for goods having shown an increase, Frank W. Noxon, secretary of the association, has written the members on this subject. In this letter he states that "Individual complaints to the Division of Finance and Purchases are now investigated where the manufacturer specifies the road, give the facts and seems to set up a prima facie case of flagrancy. It has been suggested that the Railroad Administration prescribe a standard of promptness, establish means of payment for all roads, and provide a check-up of performance. The decision of the authorities as to whether the situation requires such action will be based upon the facts as presented. Such facts our association can only obtain from the members. We shall present the matter to the Director of Finance and Purchases as soon as we have in hand sufficient material to show that the condition is general. For this purpose we have arbitrarily fixed 60 days as the line beyond which remittances will be regarded as tardy."

In this letter Mr. Noxon also asks manufacturers for definite instances of tardiness in payment and to secure this information he submitted a questionnaire to the members.

A NON-FREEZING HYDRANT

THE TROUBLES DUE to freezing of water in the hydrants in railroad yards and roundhouses in cold weather are of such constant occurrence and are responsible for so much annoyance and expense that a device which will overcome them is of great interest. A non-freezing hydrant which has been in use on the Boston & Maine for a number of years where it has given satisfactory results has recently been placed on the market for general sale.

The details and general arrangement of this hydrant are shown in the cut. The discharge end of the hydrant consists of a piece of 3/4-in. iron pipe, to which a hose coupling or any other type of connection can be attached. A one-quarter turn of this pipe in either direction moves the top cam piece on the lower, raising the washer "D" from its seat and permitting water to escape through the 3/4-in. pipe. The cam is so made that it raises the valve sufficiently to give the full discharge area of pipe. Under normal conditions the heavy steel spring holds the washer to its seat. By loosening the set screw "A" and unscrewing the cam piece "B" the entire interior of the valve can be removed for rewashing. Under such conditions the check valve "E" goes to its seat, being held there by pressure, and acting as a shut-off, preventing the waste of water.

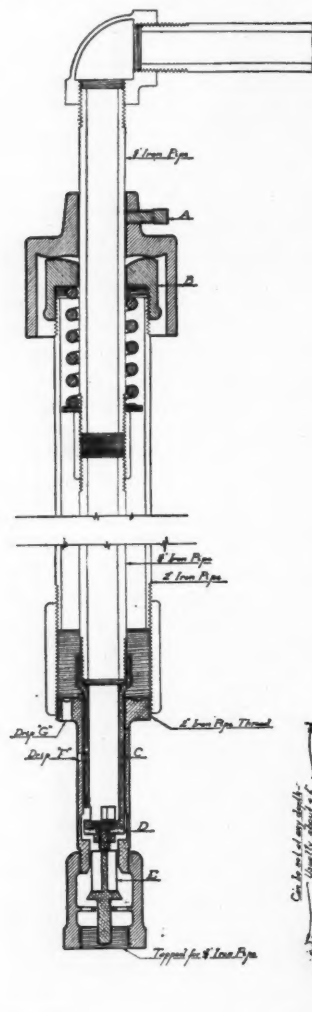
This hydrant has all the advantages of the older types and is much simpler. When the valve is closed, the water in the 3/4-in. pipe is drained automatically through the drip "F," and any that may escape into the outer casing passes off through drip "G." One-quarter turn of the 3/4-in. pipe or nozzle opens the valve wide. The valve is operated by a cam and there are no threads to wear out or give trouble.

Except parts shown in cross-hatched lines, the fixture is made up of ordinary 3/4-in. and 2-in. pipe and may be set at any depth. It may be rewashered under pressure by loosening the set screw "A" and unscrewing the cam piece "B," which allows the complete removal of the 3/4-in. pipes with the valve plunger "C" and the seat washer "D" attached, the check valve "E" auto-

matically going to its seat, preventing waste of water and doing away with the necessity of digging it up in order to rewasher it.

The hydrants in use at present are chiefly the $\frac{3}{4}$ -in. size. In railroad yards they are used for washing passenger coaches. The $1\frac{1}{2}$ -in. size are used in roundhouses

The tie check is in quintuple form, including: (1) an original or inspector certificate for the producer, which, when properly endorsed becomes a sight draft on the road treasurer; (2) a duplicate for the railroad purchasing agent; (3) a triplicate for the assistant auditor of disbursements of the railroad; (4) a memor-



DETAIL SECTION AND SKETCH PLAN OF THE HYDRANT

for washing out locomotive boilers, ash pans and the dumps. They are manufactured by the Sanitas Manufacturing Company, Boston, Mass.

TIES TO BE PAID FOR ON DELIVERY

THE FORM of cross tie check illustrated shows the negotiable certificate which the Southern Regional Director has instructed all roads in his territory to use, beginning not later than September 1, to provide the safe bonding of their tie inspectors in a bonding for payment on delivery of cross ties purchased. As noted in circular letter No. 366, it has been considered necessary that ties should be paid for on delivery by a negotiable tie check of this kind so that the production of cross ties will be stimulated to the greatest possible extent. There is further provision for the prompt repayment to the forwarding road by the road receiving the cross ties.

This certificate must be endorsed by the party in whose favor it is made out and when assigned to another party the authority for so doing must be shown. If cases arise in which the certificate is void and duplicate can only be had by application to the Treasurer.

UNITED STATES RAILROAD ADMINISTRATION Form 348
W. G. MCADDOO, Director General of Railroads
Atlantic Coast Line Railroad
CROSS TIE CERTIFICATE

Payable to Payetteville, N. C., July 1st 1918 No. _____

Received from Lo Smith P. O. Address Jonesboro, N. C.
the 1st day of July 1918, at or near Mile Post No. P.O.B. Cars

(No.) <u>200</u>	(Kind) <u>W. O.</u>	Cross Ties, Grade No. <u>4</u>	at <u>.96</u> Cents each	\$ <u>192 00</u>
(No.) <u>268</u>	" <u>R. O.</u>	" " <u>4</u>	at <u>.81</u>	" <u>202 50</u>
(No.) <u>176</u>	" <u>Heart Pine</u>	" " <u>5</u>	at <u>.73</u>	" <u>127 75</u>
(No.) <u>100</u>	" <u>Sap Pine</u>	" " <u>5</u>	at <u>.47</u>	" <u>47 00</u>
Total.				\$ <u>569 25</u>

Loaded and Shipped to

Billed to <u>Cent. R.R. of N.J., John Doe, R.M. Destination</u>			<u>Plainfield, N.J.</u>		
Car Initial	Car Number	No. Ties	Car Initial	Car Number	No. Ties
<u>S. A. L.</u>	<u>2026</u>	<u>365</u>			
<u>Ill. Central</u>	<u>15724</u>	<u>360</u>			

Left on Right-of-Way Line of Road

No. Ties	Station	Mile Post	Division	No. Ties	Station	Mile Post	Division

This Certificate to be filled out with indelible pencil only. Any erasure, alteration, delacement or mutilation makes this certificate void.

This Inspector-Certificate, when properly endorsed in accordance with instructions prescribed hereon, becomes a sight draft on the Treasurer of the Atlantic Coast Line Railroad at Wilmington, N. C., and will be honored on presentation, subject to correction as to prices and calculations before payment. This Certificate is only transferable when it has been properly endorsed to the party to whom it is made payable.

SAMPLE Inspector No. 123

SAMPLE CROSS TIE CERTIFICATE

andum for the regional purchasing committee and, (5) an inspector's memorandum to be kept in the inspector's book. The railroads have been instructed to look after company for the proper performance of their duties at not less than \$5,000 each, and have also been advised that in case of any shortage of funds for the purchase of cross ties by prompt payment, they shall apply to the director of finances and purchases at Washington for necessary funds.

The form shown, which is now adopted as standard for all roads in the Southern Region, is one that has been used for a number of years by several roads in the South. It is to be approximately $5\frac{7}{8}$ by 8 in. in size.

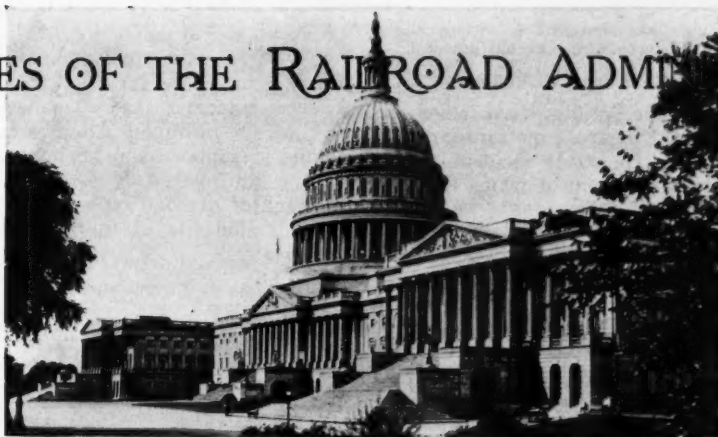
RECRUITING LABOR FOR RAILROADS.—The United States Department of Labor in a statement issued recently said:

While the prohibition against recruiting of unskilled labor by employers engaged in war work, except under the direction of the Department of Labor does not include railroads and farmers, the transportation and agricultural industries will be assisted by the United States Employment Service in every way possible.

Specialization in farm and railroad labor supplying is a feature of the central labor recruiting program and the leading branch offices have special railroad labor and farm labor divisions, while in the West and in some places in the South and East offices have been established which devote their entire attention to supplying farm labor and railroad unskilled labor. Recently the employment offices of railroads in Western territory were made a part of the Federal Employment Service system. This service will not only assist the roads in securing unskilled labor, but they will be protected from recruiting to other industries.

ACTIVITIES OF THE RAILROAD ADMINISTRATION

Abstracts of
Orders
Issued
During
August



Progress on
Additions
and
Betterments
Work

DIRECTOR GENERAL McADOO returned to his office in Washington on August 12 after an absence of nearly two months. In this interval he made an extended trip through the West, studying the problems presented on those roads. It is understood that he will devote a considerable amount of his time from now on traveling over the railways of the country and studying conditions at first hand and that one of his first trips will be over the roads in New England.

A recent order requires that the names of individual railroad companies be submerged as much as possible on all stationery and forms used in railroad operation under federal control in order to make them clearly subordinate to the names of the United States Railroad Administration. The instructions are to have stamped or printed, as may be found most economical, upon all existing stationery "in such manner as to make it clear that it is intended to eliminate the name of the corporation and yet maintain the identity of the property," a heading in the following form:

UNITED STATES RAILROAD ADMINISTRATION

W. G. McAdoo, Director General

NORTH AND SOUTH RAILROAD

In a number of instances the consideration of operating problems has involved the abandonment, during the period of federal control, of certain main track lines, one case in point being the Denver & Rio Grande main line between Salt Lake and Ogden, where the Oregon Short Line double track is used exclusively. Another case is the abandonment of the C. St. P. M. & O. main line for 8 or 10 miles north of Sioux City, Iowa, the Great Northern being used exclusively. The question of charter and ordinance requirements in each case must be considered, and where there is an obligation for continuous operation the facts in connection therewith should be reported to the regional director and Judge Payne will handle the matter with the authorities.

In Order No. 22, B. F. Bush, regional director of Southwestern lines, instructs that standards governing maintenance of way and equipment, which have heretofore been in use on individual lines in the Southwestern region, shall be continued even though these roads may be consolidated with others for operating purposes during the period of government control. The regional director stated in this circular that it is not the desire at this time that the standard plans of the larger systems be generally adopted by the smaller roads which may have been placed in the same group with a larger railway. The

same instructions will apply to those portions of the larger systems which may have been placed under the jurisdiction of more than one federal manager.

LABOR REGULATIONS

The United States Department of Labor has modified the previous order under which Mexican laborers may be secured for the Railroad Administration to engage in railway maintenance work to eliminate the requirement that 25 cents per day be deducted from their wages to be held and returned to the men when they leave the United States. Avery Turner, vice-president of the Pan Handle and Santa Fe at Amarillo, Tex., has been appointed representative of the United States Railroad Administration, with headquarters at El Paso, Tex., to properly distribute to the various railways such supply of Mexican labor as is procurable at that and other ports of entry. Railroads that have depended upon this class of labor from El Paso will communicate direct with Mr. Turner regarding their needs.

B. F. Bush, regional director of the Southwestern region, issued Order No. 34 on August 9 to the effect that the wages of track and common labor at common points where two or more railways employ such labor must not be increased over existing rates of pay within the limits of the minimum of 25 cents and maximum of 35 cents per hour without each road having a complete understanding with all of the other railroads interested at such common points.

POSTING ADVERTISEMENTS FOR LABOR ON RAILROAD PREMISES

Order No. 33, dated August 8, issued by B. F. Bush, regional director of the Southwestern region, prohibits the posting of advertisements for labor on railroad premises. The order reads as follows:

"Referring to Supplement No. 1 to Circular No. 119, dated July 6, 1918, reading as follows:

"Please direct that under no circumstances should representatives of the government departments be permitted to place on railroad bulletin boards at shops or other points, literature expressing the urgent need of the government for mechanics nor authority granted to address employees during the noon hour or at any other time for the purpose of influencing the men to leave railway service for employment in other industries."

The various government departments do not intend to solicit each other's employees and it is desired that:

1. General instructions be given to agents and other employees prohibiting the posting on bulletin boards at shops and other points of any literature expressing the need of the government for mechanics or other labor, except when expressly authorized to do so by their superior officers, and
2. Federal managers shall have it understood by the officers who would be authorized to give such directions to

agents and other employees, that they must not in any case authorize the posting of circulars designed to obtain labor, except with the express authority of the regional director.

THE TRANSPORTATION OF LABORERS

The Regional Director of the Southwestern region has issued an order relative to the payment of transportation over connecting or intermediate roads incident to the movement of laborers from the point at which they are hired to the work as follows:

Supplement No. 5 to Circular No. 63, issued by the regional director of the Western region, stipulated as follows: "Payment of fare for laborers from labor markets to the points needed and their return fare to the point where employed may be continued. Such practice will not be considered as an allowance that will have the effect of increasing compensation."

We interpret this rule as applying to payment of fare over connecting or intermediate roads and that free transportation may be issued only over the lines of the employing road as they existed prior to Federal control; that is, for example, men for service on the M. K. & T. of Texas at Dallas may be moved deadhead over the M. K. & T. from St. Louis, but where an intermediate line is used, fare should be paid. For instance, for men moving from St. Louis for service at Longview, Texas, on the Texas & Pacific, the fare should be paid from St. Louis to Texarkana.

We should not extend the practice which has heretofore prevailed, of applying free movement beyond the rails of the employing road.

DEFERRED CLASSIFICATION FOR SECTION FOREMEN

Provost Marshal General Crowder has telegraphed all draft officials requesting reconsideration of the classification of railway men now in Class I who are employed in a specified list of skilled occupations, including track foremen. Application for deferred classification should be made to the district board or the local board for trans-

mission to the district board by the individual and should be supported by affidavits. Where the individual does not wish to make application or where it is impractical for him to do so, the application may be made by the Federal manager, general manager or other representative of the Railroad Administration. The application should be supported by affidavit made by representatives of the Railroad Administration, preferably not below the rank of division superintendent.

Such affidavits of the railroad officials should state specifically:

(a) That a discontinuance, serious interruption or materially reduced operation of the railroad would result in substantial material loss and detriment to the effective maintenance of the military establishment and to adequate and effective operation of the military forces and to the maintenance of the national interest, that the railroad contributes materially to all these things and is therefore a necessary industrial enterprise.

(b) That the individual is actually and completely engaged on the railroad in the capacity as stated, is competent and qualified in such capacity and that his removal would result in direct, substantial and material loss to the adequate operation of the railroad.

(c) A brief description of his duties and a statement of why such duties are necessary to continuous operation.

(d) That the available supply of persons competent in same capacity is such that the individual cannot be replaced in such capacity without direct, material and substantial loss to operation.

(e) Each of these items may be enlarged upon according to the circumstances in individual cases. Such applications and affidavits should not be made except where the facts clearly justify.

PROGRESS ON ADDITIONS AND BETTERMENTS WORK

The United States Railroad Administration has issued a statement showing the amounts authorized for

AUTHORIZATIONS AND EXPENDITURES FOR ALL CLASS I ROADS IN CONNECTION WITH WORK CHARGEABLE TO CAPITAL ACCOUNT AS OF AUGUST 15, 1918.

CLASS OF WORK Additions and Betterments (Excluding Equipment)	1918 budget	Additions to budget	Work specifically author- ized on D. C. E. Forms 1, 2, 3 and 4, to Aug. 15, 1918, chargeable to		Expenditures from January 1, 1918, to June 30, 1918, charged to		Unexpended balance, chargeable to	
			Operating expenses	Capital account	Operating expenses	Capital account	Operating expenses	Capital account
1. Widening Cuts and Fills, Filling Trestles, etc.	\$ 5,097,989	\$ 431,723	\$ 2,336,675	\$ 6,179,333	\$ 540,294	\$ 1,920,198	\$ 1,796,381	\$ 4,259,135
2. Ballasting	9,379,271	48,176	3,716,746	11,276,956	737,611	1,400,230	2,979,134	9,876,726
3. Rails and Other Track Material....	31,365,483	174	41,513,660	28,510,674	5,276,532	7,041,450	36,237,128	20,969,224
4. Bridges, Trestles and Culverts....	36,185,921	701,597	20,341,497	32,156,700	230,159	1,239,164	1,071,880	13,040,723
5. Tunnel and Subway Improvements..	2,185,242	47,071	732,973	2,434,235	176,036	426,003	556,937	2,008,232
6. Track Elevations or Depressions....	4,112,556	.....	1,302,039	14,279,887	230,159	1,239,164	1,071,880	13,040,723
7. Elimination of Grade Crossings....	7,438,957	195,295	1,090,337	11,116,791	211,406	1,735,112	878,931	9,381,679
8. Grade Crossings and Crossing Signals.	631,082	14,918	156,483	1,214,017	56,295	533,532	100,188	680,485
9. Additional Main Tracks.....	44,574,583	1,085,427	6,750,655	46,522,416	872,545	13,263,897	5,888,110	33,258,519
10. Additional Yard Tracks, Sidings and Industry Tracks	97,199,114	5,246,654	7,870,475	94,584,606	1,312,851	21,810,800	6,557,624	72,773,806
11. Changes of Grade or Alinement....	6,359,027	117,544	2,544,511	7,917,518	408,078	1,552,525	2,136,433	6,354,993
12. Signals and Interlocking Plants....	10,962,462	156,557	2,186,544	11,056,819	390,463	3,091,068	1,796,081	7,965,751
13. Telegraph and Telephone Lines....	5,129,149	213,147	630,655	4,564,792	272,459	1,297,446	358,196	3,267,346
14. Roadway Machinery and Tools....	955,857	36,716	18,235	1,304,891	8,028	637,707	10,208	667,184
15. Section Houses and Other Roadway Buildings	1,306,847	57,304	162,762	2,075,506	50,711	1,346,635	112,071	728,871
16. Fences and Snowsheds.....	817,655	20,573	331,732	1,415,356	48,251	500,380	283,481	914,974
17. Freight and Passenger Stations, Office Buildings	20,138,359	867,198	2,986,574	26,239,012	620,298	9,439,200	2,366,276	16,799,812
18. Hotels and Restaurants.....	199,282	61,142	15,665	547,203	2,391	165,397	13,474	381,806
19. Fuel Stations and Appurtenances...	6,090,558	325,297	886,102	5,737,817	210,137	1,742,682	675,965	3,995,135
20. Water Stations and Appurtenances..	13,430,047	191,515	1,481,064	7,722,733	333,868	2,644,634	1,147,196	5,078,099
21. Shop Buildings, Engine Houses and Appurtenances	62,694,927	1,256,721	4,530,524	27,701,891	925,575	7,684,813	3,604,949	30,047,078
22. Shop Machinery and Tools.....	9,142,488	651,741	1,096,111	13,933,243	220,940	3,761,981	875,171	10,171,262
23. Elec. Power Plants, Substations, etc.	10,781,347	890,889	1,889,968	18,637,395	154,658	2,964,919	1,735,310	15,672,476
24. Wharves and Docks.....	3,286,167	75,233	871,288	2,326,930	211,091	387,887	660,197	1,939,043
25. Coal and Ore Wharves.....	7,024,937	103,401	657,187	5,195,544	270,332	1,777,880	386,855	3,417,664
26. Grain Elevators and Storage Ware- houses	2,914,202	62,095	413,250	2,349,565	64,147	1,430,640	340,103	909,925
27. Real Estate	3,309,141	.....	21,440	460,212	1,545	355,443	19,895	104,769
28. Assessments for Public Improvements	1,179,306	119,451	78,722	1,632,530	35,075	873,448	43,647	759,082
34. All Other Improvements.....	27,889,552	9,000	210,992	6,165,499	116,226	1,814,892	94,766	4,350,607
Total (excluding equipment)....	\$433,751,488	\$12,986,561	\$106,835,086	\$404,760,071	\$18,429,765	\$102,172,314	\$88,405,321	\$302,587,757

additions and betterments work up to August 15, 1918, chargeable to capital account and the amounts expended on these projects up to June 30 of this year. This information is shown in the accompanying table, from which it is noted that work aggregating \$511,595,157 has been specifically authorized to August 15, and that \$120,602,079 had been expended on these projects to June 30, or 23.5 per cent of the amount authorized.

It will be seen in the table that of the total amount authorized \$404,760,071 is chargeable to capital account and \$106,835,086 is chargeable to operating expenses and that of these amounts \$102,172,314 chargeable to capital account and \$18,429,765 chargeable to operating expenses have been expended to June 30. The total amount authorized for additions and betterments, equip-

CENTRAL WESTERN REGION

1	.55	.....	.67	.55	.45	.60	.43	.43
2	.70	.....	.78	.70	.60	.70	.60	.60
3	.75	.....	.90	.75	.65	.80	.65	.65
4	.80	.....	1.05	.80	.70	.90	.70	.70
5	.90	.....	1.18	.90	.75	.90-.95	.75	.75

In Arizona the prices for Tb ties of grades 1, 2, 3 and 4 are respectively .53, .60, .72 and .82.

PROGRESS REPORTS ON ADDITIONS AND BETTERMENT WORK

In D. C. E. Circular No. 9, R. S. Lovett, director of the Division of Capital Expenditures, specifies a form to be followed in the making of monthly reports to his office on the progress being made on Additions and

D. C. E. Form 10

(Name of road)

Report of Progress Made on Each Authorized Project Involving an Estimated Expenditure Chargeable to Capital Account in Excess of \$25,000, Showing the Condition of the Work as of _____, 191____, and Progress Made During the Month _____, 191____.

Submitted 191

REFERENCE TO AUTHORIZATION			LOCATION OF WORK	GENERAL DESCRIPTION OF WORK	UNIT OF MEASURE	WORK COMPLETED THIS MONTH	WORK COMPLETED TO DATE	PERCENTAGE DATE OF COMPLETION	REMARKS
D.E.R. Form No.	Serial No.	Total Expenditures Authorized							
1	2	3	4	5	6	7	8	9	10
4	1	\$700,000	Chicago, Ill.	Engine Terminal (1) Engine House (a) Foundations (b) Superstructure (c) Equipment (2) Machine Shop (a) Foundations (b) Superstructure (c) Equipment (3) Power Plant (a) Foundations (b) Superstructure (c) Equipment (4) Coal and Ashhandling Facilities (5) Water Supply (6) Trackage (10 miles)	Per cent Per cent Per cent Per cent Per cent Per cent Per cent Per cent Per cent Per cent Per cent Per cent Miles	15% ---- 5% 0% ---- 10% 5% ---- ---- 10% 10% 15% 2	60% 100% 90% 10% 100% 75% 15% 100% 100% 75% 60% 80% 9	11-1-18	 Delayed on account labor shortage Delayed shipments Delayed on account labor shortage Delayed shipments Delayed on account labor shortage
4	2	550,000	Clark to Baker, Ohio	2nd Track—6 miles (1) Grading (250,000 cu. yds.) (2) Bridges, Trestles, & Culverts (3) Tracklaying (6 miles)	Per cent Cu. yds. Per cent Miles	10% 15,000 10% 2	65% 175,000 60% 2	12-30-18	Delayed on account weather conditions Delayed on account material shortage Delayed on account grading operations
1	1-4	100,000	Near Pittsburgh, Pa.	Renewing Br. No. 5, Allegheny River (1) Foundations (2) Superstructure	Per cent Per cent Per cent	5% ---- 10%	60% 100% 25%	10-1-18	 Delayed shipments of steel and labor shortage
4	3	50,000	Mountain Station, Va.	Water Supply (1) Reservoir (2) Pipe Line (3,500 lin. ft.) (3) Pump House—Intake (4) Water Tanks & Columns	Per cent Per cent Lin. ft. Per cent Per cent	15% 10% 1,200 15% 10%	65% 100% 2,975 75% 60%	9-30-18	 Intake construction delayed account of high water Delayed on account of shipments of material, material now on hand

SAMPLE FORM FOR REPORTING PROGRESS ON ADDITIONS AND BETTERMENT WORK

ment and extensions, chargeable to capital account, aggregated \$1,097,398,578 up to August 15.

MAXIMUM PRICES FOR TRACK TIES

Below are lists of prices for railroad cross ties established by the regional purchasing committee for the Southwestern and Central Western regions. These schedules were not available last month when those of the other regions were published in connection with an article outlining the specifications and classifications under which the ties are purchased:

SOUTHWESTERN REGION

Grade	Ua	Ub	Uc	Ud	Ta	Tb	Tc	Td
1	.52-.62	.52-.62	.52-.62	.39-.52	.32-.39	.28-.34	.28-.34	.28-.34
2	.68-.81	.68-.81	.68-.81	.58-.77	.49-.58	.41-.62	.41-.50	.41-.50
3	.80-.95	.80-.95	.80-.95	.77-.90	.65-.72	.55-.67	.55-.67	.55-.67
4	.88-1.03	.88-1.03	.88-1.03	.85-.98	.73-.85	.63-.75	.63-.75	.63-.75
5	.95-1.10	.95-1.10	.95-1.10	.92-1.05	.80-.92	.70-.82	.70-.82	.70-.82

In New Mexico the prices paid for mountain pine (classes Tb and Td) of grades 1, 2, 3, 4 and 5, are respectively .60, .70, .80, .92 and 1.00.

Betterments work, for each project authorized where the estimated cost chargeable to capital account exceeds \$25,000. This report is to be made in triplicate, one copy being mailed to the regional director and two copies to the director of the Division of Capital Expenditures. These reports should be mailed not later than the 15th day of the month succeeding that for which the report is rendered. A sample which has been issued is shown above.

RAILROADS NOT TO PAY FOR NON-ESSENTIAL PUBLIC IMPROVEMENTS

In Circular No. 44, Director General McAdoo announced that the Railroad Administration should be consulted in advance where public authorities propose to make improvements for which a portion of the cost is to be assessed against a railroad under government control. Wherever street or road construction or other public improvements are contemplated by the authorities in

any state, county, district or municipality, for which a portion of the cost in an amount exceeding \$500 is to be charged against any railroad under federal control, the authorities are requested to take the matter up with the federal management of the road directly interested and secure the consent of the Railroad Administration in advance. In the event that this is not done the Director General will reserve the right to decide whether or not he will participate in the payment.

It is not the attitude of the Director General to oppose construction of this character which is meritorious and essential. He feels, however, that in the present stress as to the essential labor and material supply all work of this kind which can be postponed without injury should not be undertaken and the railroads should

not be expected to participate in the payment unless the expenditure is indispensable.

In a circular on this same subject, the regional director of the Southwestern region states that in the handling of special assessments of benefits against railroad property it is not sufficient that the railroad be located within the boundaries of the improvement district, but it must also appear that the benefit is actually equal to the amount of the assessment and uniform with special assessments upon other property similarly situated within the district. He states that it will be the policy to accept only such assessed benefits as are tangible and do not reflect discrimination against the railroad property in comparison with benefits assessed against other property adjacent thereto.

A Typical Rock Ballasting Organization

BY F. H. C. GRAVES

THE WORK OF REBALLASTING an entire division of double track with a dense traffic, such as was done on an important eastern road recently, is rather an extensive project, necessarily extending over a term of years, as there is usually much preliminary work to be done before the ballast budget for any season can be carried out. Most important of this work is the extending of culverts, the raising and extending of headwalls, retaining walls, etc. Existing grades over bridges generally regulate the amount of the grade revision that can be made in connection with the reballasting, but occasionally the bridge department is called in to co-operate as in the case of an old structure which happens to be on the bridge budget as well as within the limits of immediate ballasting operations, in which case the new structure can be designed to accommodate any desired revision of grade, or widening of track centers over it. It may be noted in this connection that whenever a bridge is redesigned, whether within the scope of immediate ballasting operations or not, it should be customary to provide for the revised profile by setting the new structure to the proposed grade, in which case the full depth of ballast can be put in adjacent to the bridge, with a long run-off, of about one foot in a thousand. (In the mountain portion of the division under consideration there are some 33 bridges in 20 miles.)

Other important work is the standardization of slopes in cuts and the ditches, using the excess material to widen the shoulders, to provide for grade revision, the widening of track centers and the throwing on curves on account of realinement. As the old track centers were but 12 ft., all main tracks were thrown for 13 ft. centers when rock ballasted, it being the general practice to hold the center line of either track on tangents, as circumstances may dictate, in order to put all the throw in one track whenever possible. As it is also desirable to simplify compound curves and spiral all curves, the engineers set realinement as well as grade stakes well in advance of the work. In many of the cuts on the mountain sections it was impossible to better the line or widen the track centers to any extent. On grades it was customary to work in the direction of the traffic on the high speed track. Tie renewals were made at the direction of the supervisor by the section forces before the ballasting operations were started in order that the finished line and surface might not be disturbed by minor work.

The diagram shows the organization split into its sub-units, the main division being between those on the work

train under a sub-foreman and the others doing the track work under the foreman and sub-foreman. The organization included 1 foreman, 2 sub-foremen, 1 timekeeper and 65 laborers. The equipment provided included 8 jacks, 36 stone tamping bars, 20 lining bars, 36 ballast forks, 45 shovels, 20 narrow spades (which are used for quick tamping principally), a sighting board with bobs, 2 level boards, 4 track barrows and a standard shoulder form board for rock ballast.

The standard method of procedure was to first remove the old material to the bottom of the ties, both inside the tracks and in the so-called six foot area. Pending its removal by work train it is piled up along the shoulder on fills and in the six foot center in cuts where there are deep ditches. Having dug out and removed the old material from a suitable length of track, the track is thrown out to 13 ft. centers, then trap rock is deposited under the immediate direction of the foreman, the amount being regulated by his judgment and the requirement of a "light" or "heavy" raise. The general rule is to so revise grades that there will be from 8 in. to 12 in. of trap rock under the ties. Care is exercised in order not to spread excess material which would have to be redistributed by barrows. Any additional material required is brought by the work train as directed by the foreman. The work train is engaged in picking up and unloading old material with flat cars, which are handled with the ballast cars, when not unloading ballast. Care is taken never to leave a stretch of open or dug-out track over night nor long during the day during hot weather. Instead, a light fill of stone is put in between the rails to prevent bucking.

In unloading trap rock, after a certain number of pockets have been partially opened, the work train proceeds slowly, the stone being spread evenly and leveled off at the top of the rails by a standard stone ballast spreader.

The two men digging out holes for the jacks start in, closely followed by the head jacks, using two men per jack where heavy jacks are employed. These are followed by the rear jacks and head tampers, who do preliminary tamping under the ends of ties under the supervision of the sub-foreman, to hold the track to grade until the larger gang of tampers comes up.

The main body of tampers (8 men per rail), assisted by the forkers who fork in material as required, full tamp the ends of the ties outside of rail. This sub gang is followed by the lining gang, both of which are under

the direct supervision of the foreman, who occasionally changes places with either of the sub-foreman as circumstances and his judgment dictate. Having completed the first stage, the foreman goes back with the gang to bring up the tamping inside the rails and the back filling, one or more trains having passed over the raised track in the meantime. The main body of tampers remain a sub-unit as before, being preceded by a gang of six men, who do the incidental "nipping up" of the track required to bring it to the stakes. The tamping is continued until the surface is perfect. The track is then given a final lining to the line stakes. The remaining jack hole men, advance jack men, advance tampers, and the liners are now organized to do the finishing and trimming, the material for this being dumped from the work train as conditions require.

The shoulder trimming is done with the aid of a standard shoulder form board which rests on the top of the rails and is slid back and forth as required. The rock is filled in to within about 1 in. of the top of the tie in the center of the track and the rock in the 6 ft. area is 4 in. below the top of the tie and somewhat concave. It is aimed to make each day's work complete; that is, to catch up the inside tamping and trimming each day to the immediate rear of the long "run off" which is left at the end of the day's work.

Under normal conditions with a full gang, an average raise and fair traffic conditions, the rate of progress is 7 to 8 days per mile of track, or about 16 days per mile of territory for double track. Under dense traffic it is quite usual to make the first tamping with the narrow

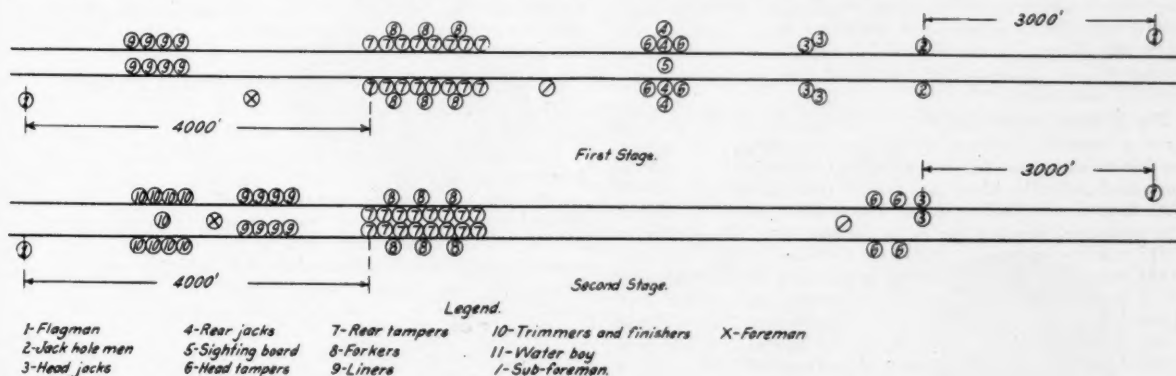
THE MATERIAL MARKET

THE RAILROAD ADMINISTRATION'S order for steel rails has been delayed once more, this time by General Pershing's requisition for 200,000 tons of 80-lb. rails for immediate delivery. Track fastenings to go with these rails constitute the most important requirement in this special field for some time, as some 30,000 kegs of 9/16 in. by 5½ in. spikes are wanted. No changes have been made in any of the standard prices for steel and iron products except a cut of \$5 per ton for steel and iron products for agricultural use which do not in any way affect materials used by the railroads. Current prices of a few of the items of interest to the maintenance of way men are given below:

Standard Bessemer rails (nominal).....	\$55.00	per gross ton
Standard open-hearth rails (nominal)....	57.00	per gross ton
Relaying rail	\$60 to 65.00	per gross ton
Track spikes	3.90	per 100 lb.
Track bolts	4.90	per 100 lb.
Angle bars	3.25	per 100 lb.
Tie plates	3.25	per 100 lb.
Wire nails	3.50	per 100 lb.
Structural steel plates.....	3.25	per 100 lb.
Structural steel shapes.....	3.00	per 100 lb.
Structural steel bars.....	2.90	per 100 lb.
Wire, plain	3.25	per 100 lb.
Barbed wire, painted.....	3.65	per 100 lb.
Barbed wire, galvanized.....	4.35	per 100 lb.

In the structural steel field there has been considerably less activity as far as the railroads are concerned than there was a month ago.

A new development in the lumber market has been the



ARRANGEMENT OF THE GANG FOR THE WORK

spades, as this can be done much more quickly, the grade being left about 1 in. high in this case to "let the train tamp it," which it does to about that extent in a short time.

In case the widening of shoulders requires material in excess of that removed from tracks, slopes and ditches—cinders are used, the widening of the shoulders being completed before beginning the ballasting. When it is necessary to widen the shoulders of fills over which the trap rock has already been spread, the filling material is shoveled under the sides of the cars, keeping the ballast as clean as possible. The work on both tracks is kept abreast as circumstances permit.

Considerable care is taken not to raise the grade under existing overhead bridges of low clearance. Here the old material is dug out between rails about 12 in. below the base of tie, trap rock is spread between the rails and the track is given a bearing on it. Then the old material is removed from under the ends of the ties and the remainder of the ballast placed.

establishment of prices on New England spruce lumber delivered, freight allowed at Boston, Mass., as governing all sales to the Government, the railroads, our Allies and such others as customarily purchase lumber for mill shipment. The prices are to be in effect from July 19 to November 1, 1918. Effective August 15 the price of copper was fixed at 26 cents per lb., this being the established price for all purchases in this country and to the Allied governments. A schedule has also been established for maximum prices of sole and belting leathers. While this is not of special importance to the railway field it is mentioned as indicative of the wide ramifications of the policy of price fixing.

Under date of July 26 new regulations were issued by the priorities division of the War Industries Board under which the regulations governing priorities has been materially simplified. One of the fundamental changes is the establishment of automatic ratings by which the manufacturer may classify many orders without the need of special instructions by the board.

GENERAL NEWS DEPARTMENT

C. E. Drayer, formerly field engineer on the New York, Chicago & St. Louis, and later secretary of the Cleveland Engineering Society, has been appointed national secretary of the American Association of Engineers at Chicago.

Six aeroplanes, built exclusively for mail carrying purposes, have been completed at Elizabeth, N. J., and have recently been delivered to the government. Two are to be sent to Washington, two to Philadelphia and two to New York.

No increase in the present rates of taxation on transportation is contemplated by the Ways and Means Committee of the House of Representatives now engaged in drafting the revenue bill intended to raise \$8,000,000,000 in war taxes for next year.

Three thousand war gardens are under cultivation by employees of the Buffalo, Rochester & Pittsburgh, according to an estimate made by J. M. Hawley, agricultural agent of that road. This is nearly double the number of gardens planted last year.

The Southern Pacific, by the exercise of greater care in inspection and purchase, has reduced the failures of rails 35 per cent per 100 miles of track, equated as to traffic carried, in eight years. The number is but one-fourth as great as the total per mile on all railroads in the United States and Canada, based on the latest available data.

Three special investigators, representing the Division of Labor, have been appointed by the Railroad Administration. These investigators are William Blackman, formerly connected with the Department of Labor; John A. Moffatt, formerly an officer of the Hatters' Union, and Anthony M. Danks, of the Division of Safety of the Interstate Commerce Commission.

The accident statistics of the Chicago & North Western show a marked decrease in the number killed and injured on that road in the 7½ years ending December 31, 1917, as compared with the 7½ years which terminated on June 30, 1910, before the "safety first" committees were organized. The statistical comparison is as follows:

315 fewer employees	killed, a decrease of 38.9 per cent.
16,443 fewer employees	injured, a decrease of 25.2 per cent.
7 fewer passengers	killed, a decrease of 8.8 per cent.
1,454 fewer passengers	injured, a decrease of 20.8 per cent.
337 fewer outsiders	killed, a decrease of 19.0 per cent.
169 fewer outsiders	injured, a decrease of 3.7 per cent.

Technical schools and universities desiring to introduce the teaching of safety, whether as a regular addition to the curriculum or only occasionally, can secure all needed aid from the National Safety Council, Chicago, Ill., W. H. Cameron, secretary, and can have the service of competent lecturers in many departments without pay, except the necessary expenses of the speakers. On accident prevention on railroads the lecturers named are H. W. Belnap, United States Railroad Administration, Washington; Marcus A. Dow, New York Central; Isaiah Hale, Atchison, Topeka & Santa Fe; R. C. Richards, Chicago & North Western, and W. C. Wilson, American Museum of Safety.

In a decision delivered on August 1, by Judge Hugh J. Kearns of the Chicago municipal court, it was held that railroad employees are in the same category as employees of the nation, state, county and city and that their wages cannot be garnished. The road pleaded that its revenues belong to the United States Government and are not subject to garnishment and its contention was upheld by the judge. He explained that the government had announced that while it was opposed to garnishment suits against railroads, it intended to investigate all claims against railroad employees. In case the claims were just and no satisfactory explanation was given as to why they had not been met, employees would be discharged.

A military railroad seven miles long, connecting Camp Humphreys, Va., with the Richmond, Fredericksburg & Potomac, has just been completed by engineer troops in training at the camp, who will also operate the trains. The work on this railroad, which is standard gage, was started during the winter by the 102nd Engineers, and the first train over the line, carrying a large number of men bound for Washington, was run on Saturday, July 27. No regular passenger service will be operated, but the road will perform a useful service in the transportation of supplies for the camp.

JOINT OPERATIONS ON THE PACIFIC COAST

In a statement authorized by W. G. McAadoo, director general of railroads, at San Francisco, while he was on the western coast, information was made public relative to changes in operating methods which are being introduced on western lines. The lines of the Southern Pacific and the Western Pacific will be used as a double track for a distance of 186 miles in Nevada. It was also decided that the Western Pacific would be used so far as possible for business between the Coast and Salt Lake, which avoids hauling freight through Ogden to get to or from Salt Lake. In California, the Western Pacific freight is now floated across San Francisco Bay, but in the future it will move over the Southern Pacific Dumbarton bridge across the lower end of the bay and will be taken by rail to and from San Francisco in the same manner as the freight moving over the Southern Pacific lines, dispensing with the use of the Western Pacific's boats. The Santa Fe, the Western Pacific and the Southern Pacific will use jointly the Southern Pacific's facilities at Oakland Pier. A study is also being made of the situation in Southern California.

PRIORITY FOR RAILROAD MATERIALS

The Priorities Division of the War Industries Board issued on July 26 circular No. 4, dated July 1. This embodies a revision of its rules and regulations governing priority in production, including changes suggested by the experience of the past six months, intended to simplify the administration of priorities and at the same time give greater assurance that the war requirements will be promptly met. The new circular continues in effect class AA, which comprises only emergency war work; class A, which comprises other war work, and class B, which comprises orders and work which, while not primarily designed for the prosecution of the war, yet are of public interest and essential to the national welfare or otherwise of exceptional importance. In order to secure rating within these three classes, application must still be made to the priorities committee, save in cases where provision is made for the automatic classifications. One of the fundamental changes embodied in the circular is the establishment of automatic ratings. Automatic classifications are allowed on orders for materials, equipment or supplies for specific uses named in the circular, which places orders "for the repair or construction of steam railroad locomotives for use on the railroads under the jurisdiction of the United States Railroad Administration" in class A-4 and orders "for the manufacture of steam railroad materials, equipment and supplies other than locomotives for use on the railroads under the jurisdiction of the United States Railroad Administration" in class B-1. The automatic classifications do not prevent higher classifications being given on orders so included where it may appear essential or desirable that a higher classification be given. Application for transportation assistance where necessary should be made to T. C. Powell, manager of inland traffic, War Industries Board, Washington, D. C., on forms of application which may be had from him on request and a preference list compiled by the priorities board is used as a guide by the United States Fuel Administration and the United States Railroad Administration in the distribution of fuel to industries and plants.

PERSONAL MENTION

CORPORATE APPOINTMENTS*

Joseph W. Fox, valuation engineer of the Central of Georgia, with headquarters at Savannah, Ga., has been made corporate chief engineer, with the same headquarters.

J. G. Rodgers, corporate engineer maintenance of way and equipment of the Pennsylvania Railroad, has also been appointed to the same position on the Long Island, with headquarters at Philadelphia.

Ralph Budd, executive vice-president and formerly chief engineer of the Great Northern, with office at St. Paul, Minn., has been elected chairman of the executive committee of the Chicago, Burlington & Quincy, with the same headquarters.

Archibald Stuart Baldwin, chief engineer of the Illinois Central, with headquarters at Chicago, has been elected vice-president of the corporation. Mr. Baldwin was born at Winchester, Va., on September 28, 1861. He entered railway service in 1879 as a rodman on the Richmond & Allegheny, now the Chesapeake & Ohio, since which he has been consecutively from 1880 to 1882, assistant engineer and engineer of the Iron & Steel Works Association of Virginia; 1882 to 1885, draftsman and assistant engineer on the Philadelphia extension of the Baltimore & Ohio; 1885 to 1886, principal assistant engineer on the Missouri river bridge at Kansas City, Mo., for the Chicago, Milwaukee & St. Paul; 1886 to 1887, resident engineer of the Louisville, St. Louis & Texas; 1887 to 1889, assistant engineer on the Louisville & Nashville; 1891 to September, 1901, roadmaster on the same road. In September, 1901, Mr. Baldwin entered the service of the Illinois Central as principal assistant engineer and on May 1, 1903, he was appointed engineer of construction. On March 20, 1905, he was promoted to chief engineer, which position he held until his appointment as mentioned above.

Robert C. Falconer, assistant chief engineer of the Erie, has been appointed chief engineer for the corporation with headquarters at New York. He was born at St. Mary's, Pa., on March 21, 1874. He was educated in the engineering school of the University of Wisconsin. In January, 1899, he began railway work with the Pennsylvania Lines West of Pittsburgh, as transitman, where he was engaged in third and fourth track work, track elevation, etc. From May, 1901, to October, 1905, he was out of railway work; during part of this time he served as contracting engineer of the American Bridge Company, and as designer and estimator for the McClintock-Marshall Construction Company. In October, 1905, he went with the Erie as assistant engineer on surveys and construction work, and has been in the continuous service of that road ever since. In October, 1911, he was appointed division engineer of the New York division, and one year later became principal assistant engineer of the lines east. From February, 1913, to January, 1916, he was superintendent of construction and since the latter date served as assistant chief engineer of the same

road, until his recent appointment as chief engineer for the corporation as above stated.

W. W. K. Sparrow, valuation engineer of the Chicago, Burlington & Quincy, with headquarters at Chicago, has been appointed chief engineer of the Chicago, Milwaukee & St. Paul to look after the interests of the corporation, effective September 1. Mr. Sparrow was born in Ireland on December 30, 1879, and was educated at Rossall, England. In 1896 he passed the examination prescribed by the Institute of Civil Engineers at London and during the same year he entered the service of the Belfast & Northern Counties Railway (Ireland), remaining in the service of that company until 1898, when he went to South Africa to engage in railroad location, construction and maintenance work in the service of the Cape Government railways and the Chartered Company of Rhodesia. From February, 1909, to July, 1912, he was in the employ of Waddell & Harrington, consulting engineers, at Kansas City, Mo., as a detailer, checker and designer. From the latter date until September, 1913, he was associated with H. von Unwerth, consulting engineer, at Kansas City, Mo. From September, 1913, to April 1, 1916, he was assistant chief engineer of the Missouri State Public Service Commission, and on March 20, 1916, he was appointed valuation engineer and a member of the valuation committee of the Chicago, Burlington & Quincy, which position he held until his appointment as mentioned above.

George A. Harwood, engineering assistant to the vice-president of the New York Central, with headquarters at New York, has been appointed corporate chief engineer of the railroads embraced in the New York Central System, including the New York Central, the Michigan Central, the Big Four and the Pittsburgh & Lake Erie. Mr. Harwood was born in Waltham, Mass., on August 29, 1875, and was educated at Tufts College, receiving the degree of Bachelor of Science in civil and electrical engineering in 1898. From 1893 to 1900 he was employed in the engineering department of the Fitchburg railroad, except for the time spent in college. Since April, 1900, he has served continuously in the engineering department of the New York Central. On November 1, 1906, he was appointed chief engineer, electric zone improvements in charge of construction of the Grand Central Terminal and the general improvement of the electric zone extending to Peekskill, N. Y., on the Hudson division, and North White Plains on the Harlem division, including the southerly portion of the Putnam division, as well as special work in connection with the West Side improvement in New York City, and new stations at Buffalo and Cleveland and other points. On July 1, 1916, he was appointed engineering assistant to the vice-president, hand-



A. S. BALDWIN



W. W. K. SPARROW



GEORGE A. HARWOOD

*As distinguished from appointments in the operating organization under federal control.

ling general engineering matters referred to the vice-president of the New York Central Lines. On June 10, 1918, he was appointed engineering assistant to the federal manager in charge of general engineering work on the New York Central, in which position he remained until July 1, when he received his appointment as corporate chief engineer, as noted above.

A. J. Witchel, assistant to the general superintendent of the Spokane & Inland Empire, the United Railways Company and the Spokane, Portland & Seattle, with headquarters at Portland, Ore., has been appointed chief engineer of the Spokane & Inland Empire and the United Railways Company, succeeding **A. M. Lupfer**, who remains chief engineer of the Spokane, Portland & Seattle lines under government supervision.

G. W. Harris, chief engineer of the Atchison, Topeka & Santa Fe Coast Lines, has been appointed chief engineer on the staff of the president of the Santa Fe System, with headquarters at Chicago, to look after the interests of the corporation. Mr. Harris has been connected with the Atchison, Topeka & Santa Fe for 21 years, having first entered the services of that company in the engineering department as a rodman in 1897 and has since served in various capacities in the engineering department, during which time he was division engineer in Colorado for a period of three years and in Texas on construction and reconstruction work for about 12 years, following which he became chief engineer of the Coast Lines at Los Angeles, Calif., which position he held until his appointment as noted above.

Horace Corey Booz, assistant chief engineer of the Pennsylvania Railroad, with headquarters at Philadelphia, Pa., has been appointed engineer of the Pennsylvania Railroad corporation, with the same headquarters. Mr. Booz was born at Bristol, Pa., on August 29, 1875, and graduated from Lafayette College, Easton, Pa., in 1895. He entered railway service with the Pennsylvania on June 8, 1896, as transitman and has been in continuous service with that road since that time. On November 1, 1899, he was made division engineer, which position he held until March 1, 1901, when he was appointed assistant engineer. He held this position until May 1, 1905, when he was made principal assistant engineer of branch lines. He was later given additional duties under the direct authority of Samuel Rea, then vice-president. On January 1, 1911, he was promoted to assistant chief engineer, which position he held when appointed corporate engineer, as noted above.

GENERAL

C. H. Stein, superintendent of the Central Railroad of New Jersey, with office at Jersey City, N. J., has been appointed assistant to the general manager of the same road and also of the Philadelphia & Reading, the New York & Long Branch, the Atlantic City and the Port Reading. Mr. Stein was born at Baltimore, Md., on June 23, 1871, and after receiving his education at the Baltimore City College, entered railway service on December 7, 1889, with the Western Maryland as rodman and transitman. In February, 1891, he was made assistant engineer on construction, and in May, 1892, was transferred to the maintenance of way department, where he remained until April, 1901, when he was made assistant roadmaster. In April, 1903, he became assistant supervisor and later supervisor of the Philadelphia & Reading, being appointed engineer mainte-



C. H. STEIN

nance of way on the Central Railroad of New Jersey in April, 1907. He held this position until February 1, 1914, when he became superintendent of the Central and Lehigh & Susquehanna divisions, which position he held when appointed assistant to the general manager, as noted above.

J. G. Bloom, division engineer on the Chicago, Rock Island & Pacific, with headquarters at Herington, Kan., has been promoted to superintendent of the Louisiana division at El Dorado, Ark.

W. S. Campbell, manager and chief engineer of the Kentucky & Indiana Terminal Railway, with headquarters at Louisville, Ky., has been appointed general superintendent, with the same headquarters.

A. B. Warner, vice-president, general superintendent and chief engineer of the Chicago, Rock Island & Gulf, with headquarters at Ft. Worth, Texas, has been appointed manager of the Second District of the Chicago, Rock Island & Pacific, with office at El Reno, Okla.

ENGINEERING

S. J. Williams, Jr., principal assistant engineer on the Wheeling & Lake Erie, with headquarters at Cleveland, Ohio, has resigned to take a position with the M. A. Hanna Coal Company.

A. R. Cook, principal assistant engineer on the Northern Pacific, with headquarters at Tacoma, Wash., has been appointed engineer maintenance of way of the lines west of Paradise, Mont., succeeding L. M. Perkins, who has been transferred.

C. N. Bainbridge, office engineer in the bridge department of the Chicago, Milwaukee & St. Paul at Chicago, has been promoted to the position of assistant engineer in the chief engineer's office, in charge of bridge inspection and erection, succeeding E. S. Meloy, deceased.

S. D. Williams, Jr., has been appointed division engineer on the Michigan Central, with headquarters at Bay City, Mich., succeeding J. R. Decker, who has resigned to engage in private business.

E. R. Lewis, assistant to the general manager in charge of engineering on the Duluth, South Shore & Atlantic, with headquarters at Duluth, Minn., has been appointed chief engineer, with the same headquarters, effective August 1.

W. H. Vance, engineer maintenance of way of the St. Louis-Southwestern, has had his jurisdiction extended to include the Louisiana & Arkansas and the Illinois division of the Missouri Pacific, with headquarters at St. Louis, Mo.

T. E. Bliss, assistant engineer on the St. Louis-San Francisco at Memphis, Tenn., has been appointed district engineer of the Frisco lines east of the Mississippi river, and the Birmingham Belt, with headquarters at Birmingham, Ala.

H. G. Clark, assistant to the vice-president in charge of operation and construction of the Chicago, Rock Island & Pacific, with headquarters at Chicago, has been appointed maintenance of way assistant to the general manager, with the same headquarters.

E. J. Correll, assistant division superintendent of the Baltimore & Ohio, with headquarters at Dayton, Ohio, has been appointed division engineer of the Toledo division, with the same headquarters, succeeding F. J. Parrish, who has been assigned to other duties.

C. A. Paquette, chief engineer of the Cleveland, Cincinnati, Chicago & St. Louis, with headquarters at Cincinnati, Ohio, and **H. Baldwin**, assistant chief engineer, with the same headquarters, have had their authority extended over the Chesapeake & Ohio of Indiana.

William S. Wollner, assistant to the chief engineer of the Northwestern Pacific, has also been appointed general safety agent of the same road, with headquarters in San Francisco, Cal. Mr. Wollner will continue to fill the position of assistant to the chief engineer in addition to his new duties.

M. L. Ford, assistant engineer of the Texas & Pacific, at Alexandria, La., has been appointed assistant engineer also of the Louisiana Railway & Navigation Company (lines west

of the Mississippi river) and the Trans-Mississippi Terminal, with the same headquarters, effective August 1.

J. A. Atwood, chief engineer of the Pittsburgh & Lake Erie, has been appointed chief engineer also of the Lake Erie & Eastern and the Monongahela railways, with headquarters at Pittsburgh, Pa. **D. K. Orr**, chief engineer of the Monongahela, has been made assistant engineer of the same road, with office at Brownsville, Pa.

F. T. Darrow, engineer maintenance of way of the Chicago, Burlington & Quincy, lines west of the Missouri river, with headquarters at Lincoln, Nebr., has been appointed assistant chief engineer of the lines west of the Missouri river and the position of engineer maintenance of way has been abolished.

J. B. Myers, district engineer maintenance of way on the Baltimore & Ohio, eastern lines, with headquarters at Baltimore, Md., has been made engineer maintenance of way, eastern lines, with the same headquarters, succeeding Earl Stimson, promoted, as noted elsewhere.

A. W. Foscoe, division engineer on the St. Louis-Southwestern of Texas, with headquarters at Mt. Pleasant, Tex., has been appointed assistant engineer on the Middle division, with the same headquarters. **W. T. Eaton** has been appointed assistant engineer on the Southern division, with headquarters at Tyler, Tex., effective August 1.

W. L. Breckinridge, engineer maintenance of way of the Chicago, Burlington & Quincy, with headquarters at Chicago, has been promoted to chief engineer of that road and the Quincy, Omaha & Kansas City, succeeding **A. W. Newton**, chief engineer of the former road, who has joined the staff of the Burlington corporation, effective August 9.

F. L. Nicholson, chief engineer of the Norfolk Southern, with office at Norfolk, Va., has been appointed consulting engineer of the Virginian with the same headquarters and with the same authority as the chief engineer, reporting to the federal manager. Mr. Nicholson is filling the vacancy caused by the illness of H. Fernstrom, chief engineer.

E. F. Mitchell, chief engineer of all of the lines originally placed under the jurisdiction of **J. L. Lancaster**, federal manager, has had his authority extended to include the lines recently added to Mr. Lancaster's jurisdiction, viz.: The Galveston, Houston & Henderson, the Houston & Brazos Valley and the Trans-Mississippi Valley, with headquarters at Dallas, Texas.

F. Merritt, chief engineer of all of the lines originally placed under the jurisdiction of **J. S. Pyeatt**, federal manager, has had his authority extended to include the lines recently added to Mr. Pyeatt's jurisdiction, namely: The Abilene & Southern, the Ft. Worth Belt, the Ft. Worth Union Passenger Station, the Houston Belt & Terminal and the Union Terminal of Dallas, with headquarters at Dallas, Texas.

A. C. Jessen has been appointed assistant engineer on the San Antonio division of the International & Great Northern, with headquarters at San Antonio, Texas. **T. S. Bond** has been appointed assistant engineer on the Grand division of the same road, the Galveston, Houston & Henderson and the Houston & Brazos Valley, with headquarters at Palestine, Texas, effective August 1.

A. H. Griffith, assistant engineer of construction of the Baltimore & Ohio Southwestern, with headquarters at Cincinnati, Ohio, has been appointed engineer of construction of the Baltimore & Ohio, western lines, the Dayton & Union Railroad and the Dayton Union Railway, having the same headquarters. **A. B. Scowden**, assistant engineer of bridges of the Baltimore & Ohio, with headquarters at Baltimore, Md., has been appointed engineer of bridges of the above mentioned roads, with headquarters at Cincinnati, Ohio.

A. A. Matthews, chief engineer of the St. Louis, Southwestern with office at Tyler, Texas, has been appointed assistant chief engineer with headquarters at Dallas, Texas. **E. S. Pennbaker** has been appointed assistant to the chief engineer at Dallas, and **R. L. Holmes**, assistant engineer of the Texas & Pacific, has been appointed engineer of water supply with the same headquarters. **W. G. Williams** has been

appointed bridge engineer at Dallas; **F. A. Mote** has been appointed assistant engineer with office at Marshall, Texas, and **F. N. Baldwin**, terminal engineer of the Trans-Mississippi terminal at New Orleans, La., has been appointed assistant engineer at New Orleans.

C. F. Womeldorf has been appointed assistant engineer in the capital expenditures division of the Northwestern region, with office at Chicago, and with jurisdiction over the roads in Illinois, Iowa, Missouri, Wisconsin and Michigan; and **T. G. Hastie** has been appointed assistant engineer in the capital expenditures division of the Northwestern region, with office at Spokane, Wash., having jurisdiction over the roads in Montana, Idaho, Washington, Oregon, and also the roads in the remaining states under the jurisdiction of **H. M. Tremaine**, assistant engineer.

F. L. Thompson, assistant chief engineer of the Illinois Central and the Yazoo & Mississippi Valley, with headquarters at Chicago, has been promoted to chief engineer



F. L. THOMPSON

of the same roads. Mr. Thompson was educated at the University of Illinois, graduating as a civil engineer in 1896, following which he entered the service of the Illinois Central on June 18 of that year, as a chainman on the reconstruction and lowering of the tracks on the lake front in Chicago. Later he was appointed rodman and inspector on concrete work. In the early part of the following year he was engaged as a rodman on the work of changing a 700-ft. tunnel to an open cut at Vicksburg, Miss. He also had charge of the building of a concrete arch and large freight house at the same place. Immediately following this work he was assigned as assistant engineer on surveys and on grade reduction work from Fulton, Ky., to Memphis, Tenn.; from January, 1900, to August of the following year he was assistant engineer in charge of grade reduction and double track work between Wickliffe, Ky. and Fulton, and for the next six months he was in charge of double tracking and grade reduction work from Irvin, Ill. to Carbondale; from February, 1902, to February, 1903, he was assistant engineer in the chief engineer's office at Chicago. The following eight months he was acting roadmaster of the Chicago division, after which he was transferred to the Louisville division, as roadmaster, where he remained until January, 1907, at which time he was appointed assistant engineer of bridges. On July 1, 1910, he was promoted to engineer of bridges and buildings and on April 1, 1913, he was appointed engineer of construction, which position he held for the following two years. On April 1, 1915, he became assistant chief engineer, which position he held until his recent promotion.

Lloyd Winfield Strayer, assistant division engineer on the New Castle division of the Baltimore & Ohio, with headquarters at New Castle, Pa., has been promoted to division engineer, with the same headquarters, succeeding **D. W. Cronin**, deceased. Mr. Strayer was born at Hall, York County, Pa., on November 8, 1885, and graduated from Purdue University in 1908. Previous to graduation from college he worked for short periods as assistant division engineer, water station repairman and signal repairman on the Erie at Meadville, Pa., and as extra gang foreman on the Chicago, Milwaukee & St. Paul, with headquarters at Glencoe, Minn. In January, 1910, he entered railway service with the Baltimore & Ohio as a rodman and has been in continuous service with that company ever since, serving in turn as signal helper and repairman, rodman, chainman and transitman, all with headquarters at Pittsburgh, Pa. On March 13, 1914,

he was made assistant supervisor at Baltimore, Md., the next year serving as assistant division engineer and later in the same year as bridge inspector on the Ohio River division, with headquarters at Parkersburg, W. Va. In January, 1917, he was appointed assistant division engineer on the Chicago division, with office at Garrett, Ind., and in June, 1918, was transferred to the New Castle division at New Castle, Pa., where he was located when appointed division engineer, as noted above.

Arnold B. Truman, building inspector in charge of new shop work and yard changes on the Northern district of the Atchison, Topeka & Santa Fe, was made division engineer of the New Mexico division, with headquarters at Las Vegas, N. M., as noted in last month's issue. He was born at Owensboro, Ky., on June 21, 1886, and after a high school education entered railway service with the Denver & Rio Grande in the maintenance and construction department. On August 1, 1912, he went to work for the Santa Fe, serving in turn as chainman, rodman and transitman until February 1, 1915, when he was transferred to the construction department as building inspector on various jobs on the Western lines of the Santa Fe. On November 1, 1915, he was transferred to the valuation department as draftsman and computer, remaining there a year, after which he returned to the construction department as building inspector on the Northern district, which position he held when made division engineer, as noted above.

Earl Stimson, engineer maintenance of way of the Baltimore & Ohio, eastern lines, with headquarters at Baltimore, Md., has been appointed general superintendent maintenance of way and structures of the Baltimore & Ohio, eastern lines, the Western Maryland, the Cumberland Valley, the Cumberland & Pennsylvania, the Coal & Coke and the Wheeling Terminal. Mr. Stimson was born at Cincinnati, O., on September 2, 1874. He was educated at Cincinnati University and at Cornell University, graduating from the latter institution in 1895. He entered railway service in June of that year as a rodman in the maintenance of way department of the Baltimore & Ohio Southwestern, with headquarters at Cincinnati. In 1896 he was promoted to assistant engineer, being transferred in 1898 to Chillicothe, O. In 1899 he was promoted to resident engineer on construction with headquarters at Osgood, Ind., where he remained until 1901 when he was advanced to the position of assistant division engineer at Chillicothe. His promotion to division engineer took place in April, 1902, when he was placed in charge of the engineering work of the Springfield division at Flora, Ill. He was transferred to Washington, Ind. in May of that year, where he remained until 1905, when he was made engineer maintenance of way of the Baltimore & Ohio Southwestern. A



ARNOLD B. TRUMAN



EARL STIMSON

further promotion to the position of chief engineer maintenance of way of the Baltimore & Ohio was given him in April, 1910. The title of this position was changed to engineer maintenance of way in 1912 and it is this position which he held at the time of his recent promotion. Mr. Stimson is the ranking vice-president of the American Railway Engineering Association, of which he has long been an active member. He is also well known for his pioneer work in applying the bonus system to railway track work.

W. H. Wells, consulting engineer of construction and **E. M. Durham, Jr.**, chief engineer of construction of the Southern, have had their authority extended to cover the following roads: The Asheville & Craggy Mountain; the Asheville & Southern; the Atlantic & Yadkin; the Blue Ridge Railway; the Carolina & Northwestern; the Carolina & Tennessee Southern; the Cincinnati, Burnside & Cumberland River; the Cumberland Railway; the Danville & Western; the Ensley Southern; the Harriman & Northeastern; the Hartwell Railway; the Hawkinsville & Florida Southern; the High Point, Randleman, Asheboro & Southern; the Lawrenceville Branch Railroad; the Northern Alabama Railway; the Roswell Railroad; the Sievern & Knoxville; the State University Railroad; the Tallulah Falls; the Tennessee & Carolina Southern; the Yadkin Railroad, and the Louisiana & Mississippi Transfer (at Vicksburg, Miss.).

Alexander Herbert Griffith, district engineer on the Baltimore & Ohio Southwestern, has been promoted to engineer of construction on the Baltimore & Ohio, Western Lines, with headquarters at Cincinnati, Ohio. Mr. Griffith was born at Alliance, Ohio, on October 10, 1867, and after attending Washington and Jefferson college for two years, entered railway service in April, 1886, with the Piedmont & Cumberland, as a rodman. After serving three years with this and other railroads, he entered the service of the Pennsylvania Railroad as a rodman in December, 1888. He was promoted to transitman in June, 1889, serving principally in this position on a great many different construction projects until September, 1893, when he became superintendent of construction with the Inman Brothers Construction Company, New York. He re-entered the service of the Pennsylvania in 1895, becoming engineer in charge of improvement work at Pitcairn Station, Pa., in September of that year. He entered the service of the Baltimore & Ohio in 1899, as resident engineer of construction, in which position he was engaged on improvement work on various parts of the line. He became assistant engineer in June, 1902, in which capacity he was in charge of various construction and improvement projects, continuing on this work until July, 1917, when he was promoted to district engineer in charge of construction work of the Baltimore & Ohio Southwestern and the Cincinnati, Hamilton & Dayton, and it was this position he occupied at the time of his recent promotion.



ALEXANDER H. GRIFFITH

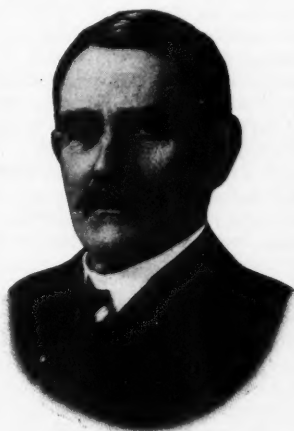
Leland P. Kimball, assistant engineer in the office of the chief engineer of the Illinois Central, at Chicago, has been appointed engineer of buildings of the Baltimore & Ohio, western lines, with headquarters at Cincinnati, Ohio. Mr. Kimball entered the employ of the Illinois Central in August, 1904, and for one year was a clerk in the operating department. He was then transferred to the engineering department as an apprentice on the Chicago division; later he was employed as rodman, instrument man, inspector and assistant engineer in the maintenance, construction and bridge departments. From October, 1915, to May, 1918, he was draftsman in the building department, and on the latter date was

appointed assistant engineer in the chief engineer's office, which position he held until his appointment, as mentioned above.

Robert Bruce Ball, engineer of the Grand division of the Atchison, Topeka & Santa Fe, Coast Lines, with headquarters at Los Angeles, Cal., has been promoted to chief engineer with the same headquarters, succeeding G. W. Harris appointed chief engineer of the Santa Fe Corporation. He was born in Missouri on December 17, 1878, and after graduating from Leland Stanford Junior University in 1904, entered railway service with the Santa Fe in June of that year, as a transitman. In November, 1906, he was promoted to assistant engineer and in January, 1910, was promoted to division engineer. Two years later he was appointed engineer on the grand division at Los Angeles, which position he held until his appointment as chief engineer, as noted above.

C. L. Persons, assistant engineer on the Chicago, Burlington & Quincy, at Chicago, assigned to special work on the chief engineer's staff, has been promoted to assistant chief engineer of the lines east of the Missouri river, with headquarters at Chicago. Mr. Persons has been connected with the Burlington in an engineering capacity for the past 14 years, having entered the services of that company in 1904. He was first engaged in topographical work in connection with grade reduction on the line between Rock Island, Ill., and Galesburg, following which he was engaged in construction and maintenance work for about two years. From 1908 to 1916 he was locating engineer on the Lines East with headquarters at Chicago, following which he was appointed assistant engineer and assigned to special work on the chief engineer's staff, which position he held until his appointment as assistant engineer, as noted above.

Charles Adelbert Morse, chief engineer of the Rock Island Lines, at Chicago, has been appointed assistant director of operation of the Railroad Administration in charge of maintenance of way, with headquarters at Washington, D. C. Mr. Morse was born at Bangor, Me., on January 1, 1859, and was educated at the University of Maine. He began railroad work in 1880 as a chairman on the Chicago, Burlington & Quincy, and was subsequently instrumentman and office man on the same road. From November, 1881 to 1884, he was division engineer on the Mexican Central. He then returned to the Burlington for a year and a half and in January, 1886, went with the Atchison, Topeka & Santa Fe, with which road he was consecutively transitman, division engineer, and resident engineer during the ensuing 15 years. From July, 1901, to February, 1902, he was assistant to the chief engineer at Topeka, Kan., following which he was principal assistant engineer at La Junta, Colo., engineer on the eastern grand division at Topeka, Kan., acting chief engineer, with the same headquarters, and assistant chief engineer. From September 1, 1905, to September 1, 1906, he was acting chief engineer of the Coast lines of the same system at Los Angeles, Cal., and in the following three years was chief engineer of the lines east of Albuquerque, with headquarters at Topeka, Kan. From November, 1909, to March, 1913, he was chief engineer of the entire Santa Fe system, which position he resigned to become chief engineer of the Chicago, Rock Island & Pacific. In April, 1914, he was appointed also chairman of the valuation committee of the Rock Island and this year, when the railroads were placed under federal operation, he was appointed chief engi-



CHARLES A. MORSE

neer of all the Rock Island lines. Mr. Morse has long been active in the affairs of the American Railway Engineering Association and is now its president.

TRACK

P. H. Ansbro has been appointed roadmaster on the First district of the Third division of the Denver & Rio Grande, with headquarters at Gunnison, Colo., succeeding J. H. Kerr, who has resigned.

Charles Kratoska, roadmaster on the Chicago & North Western at Eagle Grove, Ia., has been transferred to Ames, Ia., succeeding F. E. Crabbs. **James Watt** succeeds Mr. Kratoska.

Oscar Olson has been appointed roadmaster on the Iowa & Dakota division of the Chicago, Milwaukee & St. Paul, with headquarters at Sanborn, Ia., succeeding J. D. Boland, who has resigned.

C. Johnson has been appointed roadmaster on the Second district of the First division of the Denver & Rio Grande, with headquarters at Canon City, Colo., succeeding C. Kersey, who has been transferred.

H. Huffstutter has been appointed road supervisor of the Waterloo district of the Illinois Central, with headquarters at Fort Dodge, Ia., succeeding M. Toohey, who has been assigned to other duties, effective August 10.

C. Carlson, roadmaster on the Chicago, Milwaukee & St. Paul, with headquarters at Northfield, Minn., has been transferred to Red Wing, succeeding J. Wagner, who has been assigned to other duties. **N. F. Kelsey** succeeds Mr. Carlson at Northfield.

A. H. Sandusky, roadmaster on the Sheridan division of the Chicago, Burlington & Quincy, with headquarters at Sheridan, Wyo., has been appointed general roadmaster with the same headquarters, in charge of track maintenance between Edgemont, S. D., and Billings, Mont. **J. Kern** succeeds Mr. Sandusky as roadmaster.

A. S. Brunson, roadmaster on the Atlantic Coast Line at Trilby, Fla., has been assigned to other duties. **E. F. Anderson**, roadmaster at Parmele, N. C., has been transferred to Trilby, and **S. W. Hughes** succeeds Mr. Anderson. **J. J. Stewart**, acting roadmaster at Petersburg, Va., has been appointed roadmaster at the same point.

S. M. Robinson, roadmaster of the Mina district of the Southern Pacific, with headquarters at Mina, Nev., has been transferred to the Montello district, with office at Montello, Nev., succeeding J. Reddy, who has been transferred to the Sparks district, with headquarters at Sparks, Nev. Mr. Reddy succeeds J. E. Toombs, who has been pensioned after 47 years of service in the track department of the Salt Lake division.

D. M. Shehan, who was appointed roadmaster on the Chicago, Burlington & Quincy, with headquarters at Osceola, Ia., succeeding J. A. Lowery, as previously announced in these columns, was born in Monroe County, Ia., on September 9, 1873. After receiving a common school education he entered railway service on April 1, 1889, with the Chicago, Burlington & Quincy in the track department, and has been in almost continuous service in this department since that time.

Charles Edward Anderson, who has been appointed roadmaster on the Burlington division of the Chicago, Burlington & Quincy with headquarters at Burlington, Ia., succeeding C. E. Double, transferred, as previously announced in these columns, was born on May 29, 1886. He received a common school education and entered railway service with the Chicago, Burlington & Quincy as a section laborer on March 20, 1906. On March 22, 1909, he was promoted to section foreman and after April, 1912, he served for a considerable part of the time as extra gang foreman. He held this position when appointed roadmaster, as noted above.

Erwin A. Hazeltine has been promoted to roadmaster on the Chicago, Milwaukee & St. Paul, with headquarters at Janesville, Wis., succeeding O. J. Franklin, who has resigned. He was born at Black Earth, Wis., on April 5, 1872, and

received a common school education. He entered railway service as a section laborer with the Chicago, Milwaukee & St. Paul, at Lone Rock, Wis., in April, 1895, and in 1900 was given charge of a section with headquarters at Sauk City, Wis. He remained at this place until he was appointed roadmaster, as noted above, but served at various times as extra gang foreman and assistant roadmaster.

A. B. Gloster, roadmaster on the Louisville & Nashville, with headquarters at Etowah, Tenn., has been transferred to Middlesboro, Ky., succeeding G. N. Forrester, who has been made a captain in the Engineer Corps of the United States Army. **P. Whitehouse** has been appointed roadmaster at Latonia, Ky., succeeding **P. R. Bettison**, who has been transferred to the engineering department headquarters at Louisville, Ky.

M. Mueleners has been appointed roadmaster on the Chicago, Milwaukee & St. Paul, with headquarters at Aberdeen, S. D., succeeding **J. E. Hasburgh**, who has resigned. **Wm. Armstrong** has been appointed assistant roadmaster on the Milwaukee terminals, with headquarters at Milwaukee, Wis., succeeding **John Garrity**, who has been transferred, as noted elsewhere in these columns. **R. F. Scott** has been appointed roadmaster at Blakesburg, Ia., succeeding **Wm. Shea**, promoted..

T. F. Cassidy has been appointed roadmaster on the Chicago, Milwaukee & St. Paul, with headquarters at McGregor, Iowa, succeeding **W. J. Whalen**, who has been furloughed. Mr. Cassidy was born at Lansing, Ia., on October 14, 1893, and entered railway service with the Chicago, Milwaukee & St. Paul as an extra gang laborer in May, 1911. He served in turn as extra gang timekeeper for one year, assistant extra gang foreman for three years and extra gang foreman for two years, which position he held when appointed roadmaster, as noted above.

David Peters has been made supervisor on the Wisconsin division of the Illinois Central, with headquarters at La Salle, Ill. He was born in Burlington County, Ill., on December 1, 1876, and entered railway service with the Illinois Central, as a section laborer, on September 23, 1894. From 1899 until 1901 he was towerman on coal chutes, after the later date being made section foreman at South Addison, Ill. He next became extra gang foreman on the Freeport district, and later supervisor on the Dodgeville and Madison branches, still later being transferred to the South Amboy district.

Laves Wallom has been appointed supervisor of the Madison and Dodgeville districts of the Wisconsin division of the Illinois Central, with headquarters at Freeport, Ill., succeeding **David Peters**, transferred. Mr. Wallom was born at Moscow, Wis., on September 18, 1873, and received a common school education at Blanchardville, Wis., entering railway service with the Illinois Central, as a section laborer, in June, 1896. In June, 1899, he was made foreman with headquarters at Monticello, Ill., where he remained until April, 1910, when he was transferred to Belleville, Wis., being promoted to supervisor in July, 1918, as noted above.

Thomas P. Hines, who has been appointed roadmaster on the Louisville & Nashville, with headquarters at Etowah, Tenn., succeeding **A. B. Gloster**, transferred, was born at Florence, Ala., on March 7, 1884. After receiving a common school education he entered railway service, as a laborer, with the Louisville & Nashville on March 28, 1902. He served in turn as apprentice foreman, ballast inspector, storekeeper, section foreman, extra gang foreman, supervisor of track and cross tie inspector. He held the latter position when appointed roadmaster, as noted above.

Thomas A. Ealy has been appointed roadmaster on the Chicago, Milwaukee & St. Paul, with headquarters at Yankton, S. D., this being a new position, created by a division of territory. Mr. Ealy was born at Belle Plaine, Ia., on January 19, 1870, and entered railway service with the Chicago & North Western as a section laborer. After three

years he was made bridge carpenter, next serving for one year as brakeman, and the next 11 years as section yard and extra gang foreman. He then went to the Chicago, Milwaukee & St. Paul as extra gang foreman, with headquarters at Tama, Ia., where he remained for 14 years until appointed roadmaster, as noted above.

John William Hughes, whose appointment as roadmaster on the Atlantic Coast Line, with headquarters at Parmele, North Carolina, has already been announced in these columns, was born in Chadbourn, N. C., in September, 1889. He entered the service of the Atlantic Coast Line in February, 1912, as rail gang flagman, and in July of that year was made assistant foreman. In July, 1913, he was promoted to rail gang foreman and subsequently served as flagman, extra gang foreman, and again rail gang foreman till September, 1915. He then served successively as ballast train flagman, ballast train conductor and pit foreman, and in January, 1917, was made steam shovel superintendent, which position he held till July, 1918, when he received his appointment as roadmaster.

Peter Margraf, who has been appointed roadmaster on the Bay City division of the Michigan Central, with headquarters at Lapeer, Mich., as announced in last month's issue, was born at Dyer, Indiana, on January 3, 1878. He received a common school education and entered railway service with the Michigan Central as a section laborer in 1896. In 1900 he was promoted to section foreman on the Ross section and in June, 1905, was given charge of an extra gang on the main line. In 1906 he was made yard foreman, in charge of the Michigan City, Ind., yard; he was appointed road, train and general foreman of construction in June, 1907. He remained in this position until 1909, when he was made assistant roadmaster on the Western division, which position he held when appointed roadmaster, as noted above.

R. H. Cunningham has been appointed roadmaster of the Kansas City division of the Chicago, Milwaukee & St. Paul, with headquarters at Cedar Rapids, Iowa, succeeding **J. C. Burke**, who has been assigned to other duties. Mr. Cunningham was born at Leroy, Ill., on December 29, 1869. He entered railway service with the Chicago, Milwaukee & St. Paul, on April 13, 1888, and has been in continuous service with this road and on this division ever since. In 1893 he was made extra section foreman and in 1897 was appointed section foreman, with headquarters at Lucerne, Mo. He was assigned an extra gang in 1903, with headquarters at Blakesburg, Iowa, which position he held when made roadmaster, as noted above.

J. Haas, track inspector in the engineering department of the Panhandle & Santa Fe on new lines in Texas, has been appointed roadmaster with headquarters at Canadian, Texas, succeeding **E. E. Crowley**, transferred. Mr. Haas was born at Leavenworth, Kan., on May 24, 1874, and after receiving a common school education entered railway service on March 1, 1892, as a laborer, with the Atchison, Topeka & Santa Fe, at Leavenworth. After serving as section and extra gang foreman, he was promoted to roadmaster, on March 28, 1906, on the Western division, having headquarters, in turn, at Great Bend, Dodge City and Hutchinson, Kansas. In October, 1911, he was transferred to the New Mexico division, with headquarters at Trinidad, Colo., where he remained two years, when he was transferred to the Illinois division. In October, 1917, he was assigned to the engineering department as track inspector on new lines in Texas, which position he held when appointed roadmaster, as noted above.

Daniel Foley, roadmaster on the East division of the Michigan Central, has been promoted to inspector of track, with headquarters at Jackson, Mich. He was born at Medford, Mass., on July 4, 1855, and after receiving a high school education in Cook county, Ill., entered railway service with the Michigan Central in June, 1872, as a laborer in track and bridge gangs. In 1875, he was made a foreman on the

Saginaw-Mackinac division, where he remained until 1883, when he served as foreman of work train and extra gangs on the Bay City, Saginaw-Mackinac divisions. He was made assistant roadmaster on the Mackinac division in 1886, and was appointed roadmaster on the Saginaw division on April 1, 1890. In 1892, he was again transferred to Jackson as roadmaster in charge of the East, Middle and Grand Rapids divisions and in October, 1916, was made roadmaster of the East division, which position he held when promoted to inspector of track, as noted above.

Charles J. Collins, who has been appointed roadmaster of the Glens Ferry district of the Oregon Short Line, with headquarters at Glens Ferry, Idaho, as announced in last month's issue, was born in Missouri on August 21, 1863. He received a common school education and entered railway service on April 18, 1881, with the Atchison, Topeka & Santa Fe. He remained with this road until August, 1895, when he went to the Chicago, Rock Island & Pacific. In March, 1902, he went with the Northern Pacific, where he remained a year, and then went to the Great Northern, being stationed at Everett, Wash. In May, 1904, he served on an extra gang with the Oregon Washington Railroad & Navigation Company, and worked on an Oregon Short Line section at Weiden, Idaho, later in the same year. He was transferred from there to Nevada. In 1911, he was transferred to Richfield, Idaho, where he was stationed, when appointed roadmaster, as noted above.

John Garritty has been appointed roadmaster on the Chicago, Milwaukee & St. Paul, with headquarters at Beloit, Wis., succeeding **M. Gaylord**, resigned. Mr. Garritty was born at Madison, Wis., on September 29, 1867, and received a common school education. He entered railway service with the Chicago, Milwaukee & St. Paul, as a section laborer, in March, 1886. He remained with this road seven years, serving in turn as section foreman and extra gang foreman. In 1893, he went with the Great Northern as a section foreman and in March, 1900, was promoted to assistant roadmaster, remaining in this position for seven years. He was appointed general roadmaster of the Rocky Mountain division of this road in 1909 and held this position four years, when he was transferred to the Missabi division with headquarters at Superior, Wis. After three years he returned to the Chicago, Milwaukee & St. Paul and after one year's service was made roadmaster, as noted above.

Thomas L. Williamson has been appointed roadmaster of the Mina district of the Southern Pacific, with headquarters at Mina, Nev., succeeding **S. M. Robinson**, who has been transferred. Mr. Williamson was born at Liverpool, Eng., on April 21, 1884, and went to school in this country, graduating from the Salt Lake City, Utah, high school in 1901. In August of the same year, he entered railway service with the Rio Grande Western. In 1904, he went with the Oregon Short Line as chainman in the construction department and in June, 1907, was transferred to the maintenance of way department as transitman on the Utah division of the Union Pacific. From 1909 to 1912 he was a student in railway operation on the Oregon Short Line. In the latter year he became assistant trainmaster of the Ogden Union Railway & Depot Company. The next year he was made general foreman in charge of double track at Kemmerer, Wyo., and also assistant engineer at Pocatello, Idaho. In 1914, he was assistant supervisor in the bridge department of the Idaho division of the Oregon Short Line. In 1915, he went with the Southern Pacific as roadmaster's clerk and the same year was made section foreman of the Susanville yard, becoming acting roadmaster of the Hazen district in 1918, and roadmaster on August 1, as noted above.

James Francis Burke has been appointed roadmaster on the Chicago, Milwaukee & St. Paul, with headquarters at Sioux City, Ia., succeeding **O. Carlson**, who has been granted an unlimited leave of absence. Mr. Burke was born at Marble Rock, Ia., and after a common school education and a course with the International Correspondence School entered railway service in March, 1886, with the Chicago, Milwaukee & St. Paul, as a water boy. He next became a sec-

tion laborer and was made foreman of a section on the Kansas City division at Cedar Rapids, Ia. He was given charge of an extra gang in 1893. In 1900, he went with the Chicago, Burlington & Quincy as extra gang foreman and later was made roadmaster on the Union Pacific. He later returned to the Chicago, Milwaukee & St. Paul as extra gang foreman, which position he retained until 1906, when he went with the Kansas City Bolt & Nut Co. for two years. In 1908, he was made roadmaster on the Denver & Rio Grande. He returned to the Burlington for a short time and then spent four years with the Kansas City Terminal. In 1916, he was given charge of the construction of a new yard for the Rock Island at Eldon, Ia., and on its completion became extra gang foreman for the Union Pacific, working at Camp Funston. On July 5, 1918, he returned to the St. Paul and was appointed roadmaster, as noted above.

BRIDGE

Walter R. Roof, assistant bridge engineer on the Chicago Great Western, with headquarters at Chicago, has been appointed bridge engineer with the same headquarters.



WALTER R. ROOF

Mr. Roof was born at New Castle, Ind., on April 15, 1881, and graduated from Purdue University in 1906. In June of the same year he entered railway service with the Chicago & North Western at Chicago as a rodman, going to the Pullman Company the next year in an engineering capacity. In 1907 he went to the Illinois Central as bridge and building draftsman, and remained in that position until 1910, when he went to the Chicago Great Western in the same capacity. In 1913 he was promoted to assistant bridge engineer, which position he held until his

appointment as noted above.

W. G. Williams, bridge engineer of the Texas & Pacific, with headquarters at Dallas, Texas, has had his authority extended over the St. Louis Southwestern Railway of Texas, the International & Great Northern, the Trinity Branch of the Missouri, Kansas & Texas, the Beaumont & Great Northern, the Galveston, Houston & Henderson, the Houston & Brazos Valley and the Trans-Mississippi Terminal, all under the jurisdiction of J. L. Lancaster, federal manager.

Arent S. Scowden, assistant engineer of bridges on the Baltimore & Ohio, Western Lines, with headquarters at Baltimore, Md., has been appointed engineer of bridges, with office at Cincinnati, Ohio. He was born in Norway on May 19, 1877, and graduated from the Polytechnical Institute of Christiania. In 1904 he entered railway service with the Baltimore & Ohio as a draftsman and remained with that road for two years, becoming assistant engineer in the bridge department of the Carolina, Clinchfield & Ohio in 1906. In 1908 he went to the Baltimore & Ohio as chief draftsman in the bridge department. In 1916 he was promoted to assistant engineer of bridges, which position he held when he received his appointment as noted above.

James M. Gibson, general foreman on the first district of the eastern lines of the Grand Trunk, whose appointment as supervisor of bridges and buildings on the Grand Trunk Lines in New England has already been announced in these columns, was born in Renfrew, Scotland, on June 17, 1856. After attending the public schools of Portland, Me., he entered the employ of the Grand Trunk, as an apprentice, on May 1, 1873. In January, 1886, he was appointed assistant foreman of the Portland terminal and was promoted to foreman at

the same place in April, 1896. In January, 1902, he was appointed general foreman of the first district of the eastern lines, which position he held until receiving his recent appointment, noted above.

PURCHASING

M. W. Stevens has been appointed purchasing agent and storekeeper of the Grand Trunk Lines in New England, with office at Portland, Me.

Ralph P. Moore, purchasing agent of the Duluth & Iron Range, with headquarters at Duluth, Minn., has had his jurisdiction extended over the Duluth, Missabe & Northern.

F. H. Fechtig, purchasing agent of the Atlantic Coast Line and the Charleston & Western Carolina, with office at Wilmington, N. C., has been appointed also purchasing agent of the Winston-Salem Southbound.

Harvey De Camp, purchasing agent of the Gulf & Ship Island, with office at Gulfport, Miss., has been appointed purchasing agent also of the Mississippi Central and the New Orleans Great Northern, with office at Hattiesburg, Miss.

W. J. Hiner, purchasing agent of the Cleveland, Cincinnati, Chicago & St. Louis, with headquarters at Cincinnati, Ohio, and **C. C. Dibble**, general storekeeper of this road at Indianapolis, Ind., have had their authority extended to include the Chesapeake & Ohio of Indiana.

L. N. Hopkins, purchasing agent of the Chicago, Burlington & Quincy, has also been appointed purchasing agent of the Quincy, Omaha & Kansas City, with headquarters at Chicago.

C. B. Williams, purchasing agent of the Central of New Jersey at New York, has been appointed purchasing agent of that road, also of the Philadelphia & Reading, the New York & Long Branch, the Atlantic City and the Port Reading, with headquarters at Philadelphia, Pa.

J. W. Gerber, general storekeeper of the Southern Railway, with office at Washington, D. C., has also been appointed general storekeeper of the Alabama & Vicksburg, the Carolina, Clinchfield & Ohio, the Carolina, Clinchfield & Ohio of South Carolina, the Georgia Southern & Florida and the St. Johns River Terminal, with headquarters at Washington, D. C.

R. L. Irwin, purchasing agent of all of the lines originally placed under the jurisdiction of **J. L. Lancaster**, federal manager, has had his authority extended to include the lines recently added to Mr. Lancaster's jurisdiction, viz.: The Galveston, Houston & Henderson, the Houston & Brazos Valley and the Trans-Mississippi Terminal, with headquarters at Dallas, Texas.

J. E. Anderson, purchasing agent of all of the lines originally placed under the jurisdiction of **J. S. Pyeatt**, federal manager, has had his authority extended to include the lines recently added to Mr. Pyeatt's jurisdiction, namely: The Abilene & Southern, the Ft. Worth Belt, the Ft. Worth Union Passenger Station, the Houston Belt & Terminal and the Union Terminal of Dallas, with headquarters at Dallas, Texas.

The Western Regional Purchasing Committee has been dissolved and replaced by three separate committees, one for each of the three regions which formerly constituted the Western region. The committees appointed are as follows: **Charles A. How**, general purchasing agent of the Missouri Pacific at St. Louis, Mo., and chairman of the Western Regional Purchasing Committee, has been appointed chairman of the Regional Purchasing Committee for the Southwestern Region, with headquarters at St. Louis. **J. L. Cowan**, purchasing agent of the San Antonio & Aransas Pass at San Antonio, Tex., has also been made a member of this committee. **L. S. Carroll**, general purchasing agent of the Chicago & North Western at Chicago, and a member of the Western Regional Purchasing Committee, has been appointed chairman of the Regional Purchasing Committee for the Northwestern Region, with headquarters at Chicago. **F. A. Bushnell**, purchasing agent of the Great Northern at St. Paul, Minn., and a member of the Western Regional Purchasing Committee, has also been appointed a member of

this committee, with headquarters at Chicago. **L. N. Hopkins**, purchasing agent of the Chicago, Burlington & Quincy at Chicago, has been appointed chairman of the Regional Purchasing Committee for the Central Western Region, with headquarters at Chicago. **M. J. Collins**, general purchasing agent of the Atchison, Topeka & Santa Fe at Chicago, has been appointed a member of this committee, with headquarters at Chicago. All instructions and circulars heretofore issued by the Western Regional Purchasing Committee will remain in effect until further notice.

IN MILITARY SERVICE

R. W. Kennedy, assistant valuation engineer of the Atchison, Topeka & Santa Fe, at Topeka, Kan., has entered the United States army.

Lieutenant Paul W. Leisner, formerly chief draftsman in the bridge department of the Chicago & North Western at Chicago, has been severely wounded in France.

J. M. Grant, engineer maintenance of way of the Chicago, Peoria & St. Louis, with headquarters at Springfield, Ill., has left that company to become captain in the Engineer Officers' Reserve Corps, and has been assigned to Camp Lee,

OBITUARY

R. E. Todd, assistant engineer of the Chicago & North Western, with headquarters at Madison, Wis., met with an accident on August 22, which resulted in his death.

Charles Allen Goodnow, vice-president of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, died at Seattle, Wash., on July 26, following a brief illness. Mr. Goodnow was born at Baldwinville, Mass., on December 22, 1853, and was active in railway work for nearly half a century, his best known recent work being in connection with the electrification on St. Paul's Coast line, of which he was in charge.

Augustus Mordecai, for many years in the engineering department of the Erie, died at his home in Cleveland, Ohio, on July 28, at the age of 70. He was born in Philadelphia, Pa., and graduated from the Polytechnic College of Pennsylvania, entering railway service as a rodman in the construction department of the Dutchess & Columbia, now a part of the Central New England. He later served in the construction departments of the Connecticut Western, the St. Louis, Council Bluffs & Omaha, now a part of the Missouri Pacific, and the Pittsburgh, Virginia & Charleston, now a part of the Pennsylvania. In 1872, Mr. Mordecai became division engineer in charge of maintenance on the Atlantic & Great West, now a part of the Erie, with headquarters at Cleveland, Ohio. He remained with the Erie for the next 20 years, serving in various capacities. In 1909, he became consulting engineer at Cleveland, assisting in the work on the Belt Line around Cleveland. He also participated in valuation work on the New York Central, the New York, New Haven & Hartford, the Lehigh Valley and the Canadian Pacific.

Women Replace Men—Women continue to replace men in new occupations in railway work from week to week. The Department of Labor recently drew attention to the fact that women have been successfully employed in railroad tank painting, and noted that one of the many unusual calls received at the various local offices of the Federal Employment Service recently was one from an eastern railroad for six baggage porters, which was promptly met.

Bonus to Santa Fe Soldiers Promoted—Every officer or employee of the Atchison, Topeka & Santa Fe who wins a commission while in foreign military or naval service will receive \$200 from the Santa Fe Foreign Service Fund to defray the cost of his equipment as an officer. Sometimes a man declines a commission owing to the expense involved in its acceptance. The Santa Fe people hope by removing this factor to spur every man in the ranks to greater efforts to get his bars. This fund is being collected by the Santa Fe Magazine and now aggregates over \$3,500.

CONSTRUCTION NEWS

The Atchison, Topeka & Santa Fe has completed plans for the construction of a one-story power plant, 100 ft. by 100 ft., at Shopton, Ill.

The Santa Fe has commenced the construction of extensive new freight and passenger terminal facilities at Tulsa, Okla.

The Canadian Northern has been given authority by the Dominion government to extend its line north from Victoria, B. C., along the coast for a distance of 70 miles. The line is graded, and the provincial government, which owns the rails, offers them to the Canadian Northern, so that work will be resumed at once. The provincial government will supply about 40 acres in Victoria for terminals.

The Canadian Pacific is lining the 5-mile Connaught tunnel at a cost of approximately \$250,000. The Carter-Hall-Aldinger Company, Limited, Winnipeg, Man., has the contract for the work.

The Chesapeake & Ohio has let a contract to the Arnold Company, Chicago, to construct additions to its shops at Huntington, W. Va., which will cost about \$500,000. The improvements include a brass foundry, 55 ft. by 240 ft.; a blacksmith shop, 60 ft. by 288 ft.; an erecting shop, 113 ft. by 400 ft.; a transfer table pit, 72 ft. by 600 ft., and miscellaneous machinery and equipment which will be installed in the buildings.

The Chicago & North Western has given a contract to the C. W. Gindele Company, Chicago, for a 20-stall roundhouse to be built at Fond du Lac, Wis.

This road has also awarded a contract to G. A. Johnson & Son, Chicago, to construct a seven-stall enginehouse at Benld, Ill. The North Western will also build a frame, mechanical coaling station at that place.

The Chicago, Burlington & Quincy has awarded a contract to Ralph Sollitt & Sons, Chicago, for the labor in connection with the building of an 8,000-ton extension to the ice house at Morton Park, Ill.

This company has also awarded a contract to the Rust Engineering Company, Pittsburgh, Pa., to construct a 150-ft. concrete smoke stack, 6 ft. 6 in. internal diameter at the top, for a power plant at St. Joseph, Mo.

The Burlington has awarded contracts to the Ogle Construction Company, Chicago, for six 150-ton steel coal chutes, to be located at Seneca, Neb., and at Echeta, Orin Junction, Lysite, Powder River and Clayton, Wyo.

The Chicago Great Western has awarded a contract to T. S. Leak & Company, Chicago, for a 150-ft. extension to a freight house at Omaha to provide space for the Rock Island. The extension will have brick walls, concrete floor and foundation and a Johns-Manville prepared roof, and will be tapering in shape, 40 ft. wide at one end and 22 ft. at the other. The extension with additional track facilities will cost about \$20,000.

This company has also let contracts to the Railroad Water & Coal Handling Company, Chicago, for a 100-ton frame coaling station at Kansas City, and a 100-ton frame coaling station at Talmadge, Iowa, the former to be equipped with an Ogle hoist and operated by a Fairbanks Morse type-Y oil engine.

The Great Western has also awarded contracts for two 50-ton frame coaling stations of the same type as above to the Ogle Construction Company, Chicago, one of which will be erected at Rochester, Minn., and the other at Mason City, Iowa. The cost of each installation is about \$10,000.

The Chicago, Rock Island & Pacific has awarded a contract to the Railroad Water & Coal Handling Company, Chicago, for a 600-ton coaling station at Burr Oak, Ill., with 44-ft. hopper and a sand drying plant.

The Elgin, Joliet & Eastern has awarded a contract to the Wm. Graver Tanks Works, Chicago, for the installation of Graver type-K water treating plants with quartz filters and with a capacity of 15,000 gallons per hour, at Spaulding and Frankfort, Ill.

The Hocking Valley has awarded a contract to the Austin Company, Cleveland, O., for the erection of a 10-stall roundhouse at Nelsonville, O., to be completed in 75 working days.

The Illinois Central has awarded a contract to T. S. Leake & Co., Chicago, for the construction of mechanical facilities at Hawthorne, Ill., including an eight-stall roundhouse, a power plant, a locker room and toilet facilities—all fire-proof and of concrete and brick construction, a clam-shell cinder pit, an 85-ft. turntable, sewers, water works and necessary trackage. The contract was let on a cost-plus-percentage basis and the estimated outlay for the work is approximately \$150,000.

This road has also awarded contracts for the construction of ten water softening plants at different points on its line. The contract for a plant at Dubuque, Iowa, which will have a capacity of 30,000 gal. per hr., was awarded to the William Graver Tank Works, Chicago. Plants at Carbondale, Ill., and Freeport, each of which will have a capacity of 50,000 gal. per hr., will be constructed by the International Filter Company, Chicago. At Independence, Iowa, a 15,000-gal.-per-hr. plant will be constructed by the Permutit Company, Chicago. At Charles City, Iowa, Osage and Mona, plants with capacities of 6,000 gal. per hr. will be constructed by the L. M. Booth Company, Chicago. The Railroad Water & Coal Handling Company, Chicago, will build a 30,000-gal.-per-hr. capacity plant at Cherokee, Iowa; a 6,000-gal.-per-hr. capacity plant at Merrill, Iowa, and a plant of the same capacity at Marcus, Iowa.

The Illinois Central has also awarded a contract for the construction of mechanical facilities at Benton, Ill., to C. B. Johnson & Son, Chicago. The work will be done on a cost plus percentage basis and includes the construction of two new cinder pits, a locomotive crane, a frame enginehouse, a boiler house and additional water facilities.

The road has also awarded a contract to C. B. Johnson & Son, Chicago, for the construction of a five-stall roundhouse, a boiler room, a sand house, locker room, oil room and cinder pit, and the installation of a Robertson cinder conveyor at Du Quoin, Ill. The work will be done on a cost plus percentage basis.

The Illinois Central is also planning terminal facilities at Central City, Ky., which will include a 12-stall brick roundhouse with an 85-ft. turntable, a one-story brick power house and machine shop, a 100,000-gal. water tank of wood on a steel frame, two conveyor pits and a concrete stack.

The Lake Erie & Western has awarded a contract to the Arnold Company, Chicago, for the construction of a 20-stall roundhouse and an oil house at Lima, Ohio, and a 10-stall roundhouse at Peru, Ind.

This company also contemplates building a locomotive repair shop to take the place of the shops destroyed by fire at Lima, Ohio, some time ago. The location, however, has not yet been decided.

The Michigan Central has awarded a contract to the Walbridge-Aldinger Company, Detroit, Mich., to construct a boiler and tank shop for the repair of locomotives at Jackson, Mich. The building will be of brick and steel construction, 215 ft. by 270 ft., and will cost approximately \$355,000.

The Ogle Construction Company, Chicago, has been awarded contracts for the construction of coaling stations, to be built for the following railways: The Central of Georgia, a 300-ton concrete coal chute at Good Water, Ala.; the Elgin, Joliet & Eastern, two 100-ton concrete coal chutes, at South Chicago, Ill., and Gary, Ind.; the New York Central, a 200-ton steel chute at Minerva, Ohio; the Missouri, Oklahoma & Gulf, a 100-ton steel coal chute at Henryetta, Okla.; the Illinois Central, a 200-ton timber chute at Carbondale, Ill.; the Colorado & Southern, five 150-ton timber chutes to be located at Fort Collins, Colo., Cheyenne, Wyo., and Amar-

illo, Wichita Falls and Childress, Tex.; the Chicago, St. Paul, Minneapolis & Omaha, a 150-ton timber chute at Omaha, Neb.; the Chicago, Indianapolis & Louisville, a 200-ton timber coal chute at Indianapolis, Ind.; the Chicago & Eastern Illinois, a 300-ton timber chute at Jackson, Ind., and a 200-ton timber chute at Mokena, Ill.; and the Baltimore & Ohio, a chute at Wilmington, Del.

The Oregon, California & Eastern is the name of a line recently completed and put in operation between Klamath Falls, Ore., and Olene, a distance of 10 miles. Construction work is in progress on 10 miles additional between Olene and Diary.

The Pacific Great Eastern has been issued orders by the province of British Columbia granting authority to build a 36-mile addition to its line.

The Pennsylvania Railroad, western lines, has awarded a contract to the Walbridge-Aldinger Company, Detroit, Mich., to construct an enginehouse and other engine terminal facilities at Canton, Ohio.

The Pennsylvania-Detroit Railroad has bought property for a large freight depot at Detroit, Mich., but on account of war conditions has postponed construction work indefinitely. The property extends from Third to Sixth streets and from Congress to Larned streets.

The Roberts & Schaefer Company, Chicago, has been awarded contracts for railway construction in the past 60 days aggregating \$865,000. Contracts for 21 reinforced concrete automatic electric coaling plants have been secured covering plants having capacities varying from 100 tons to 1,200 tons or a total storage capacity in the aggregate of 8,700 tons. The railroads, capacities and location of these stations are enumerated as follows: A plant for the Philadelphia, Baltimore & Washington of 1,200 tons at Wilmington, Del.; a plant for the Pennsylvania Railroad of 600 tons at Gardenville terminal, and another at Buffalo, N. Y.; a plant for the Pennsylvania Lines of 700 tons at Canton, Ohio, one of 700 tons at Crestline, Ohio, one of 700 tons at Mingo Jct., Ohio, one of 1,000 tons at Girard, Ohio, and one of 200 tons at Wheatland, Pa.; one for the Pere Marquette of 500 tons at Wyoming, Mich., one of 150 tons at Grand Jct., Mich., and one of 250 tons at New Buffalo, Mich.; a plant for the Terminal Railroad Association of St. Louis of 300 tons at St. Louis, Mo., and one of 300 tons at Madison, Ill.; one for the Toledo & Ohio Central of 300 tons at Columbus, Ohio; a plant for the New York Central Lines of 300 tons at Coalburg, Ohio; also a cinder handling plant at Minerva, Ohio, a coaling plant of 100 tons at Ft. Wayne, Ind., and a cinder handling plant at Coalburg, Ohio; a plant for the Chesapeake & Ohio of 500 tons capacity at Handley, W. Va.; one for the Pennsylvania Railroad of 200 tons capacity at South Oil City, Pa.; one for the St. Louis Southwestern of 200 tons at Jonesboro, Ark., and one of 200 tons at Commerce, Texas, and also one plant for the Nashville, Chattanooga & St. Louis of 300 tons at Atlanta, Ga. (frame plant).

The Texas & Pacific is planning to construct shops at a new location to replace its machine shop and auxiliary buildings at Marshall, Tex., which were destroyed by fire on June 9 with an estimated loss of about \$300,000.

The Toledo & Ohio Central contemplates the expenditure of \$20,000 for improvements at Fostoria, Ohio. The company has purchased the water right of an abandoned quarry and will construct a water softening plant in the north railroad yards.

The United States Railroad Administration has authorized the construction of about 50 miles of railroad and 30 miles of short branches to provide transportation for the products of a vast spruce region on the Olympic peninsula. The outlet of the proposed lines will be at Deep Creek near Port Crescent, Wash., on the Chicago, Milwaukee & St. Paul, about 80 miles west of Port Townsend.

The Virginian has let a contract to the James Stewart Construction Company, Norfolk, Va., for double tracking its line from Sewalls Point (Va.) terminal westerly to South Branch yard, a distance of 13.3 miles. Track has already been laid on 3.7 miles.

SUPPLY TRADE NEWS

GENERAL

The property of the Orenstin-Arthur Koppel Company at Koppel, Pa., scheduled for sale on August 15 by the alien property custodian of the United States is not to be sold until September 12.

The Austin Company, Cleveland, Ohio, has opened a branch office in the Peoples Gas building, Chicago. This office is the result of an increased volume of business from the middle west.

The Chicago Pneumatic Tool Company has started work on the construction of an addition to the Cleveland plant, which is planned to double the present output. It is expected that work will be completed on the building about November 1. The necessary equipment has been ordered.

The Certes Supply Company of St. Louis, Mo., with office in the Frisco building, has been appointed district sales agent for the Track Specialties Company. **The J. S. Morrison Company** of Pittsburgh, Pa., with office in the Oliver building, has been appointed Pittsburgh representative of this same company.

The Aspromet Company, Pittsburgh, Pa., manufacturers of asbestos-protected metal for use in building construction, announces that this company opened an office in the Munsey building, Washington, D. C., on August 1. This office is in charge of **O. O. Robinson**, district manager, and will also be under the personal supervision of **H. E. Marks**, general sales manager of the company.

PERSONAL

The Q. & C. Company, New York, has opened a branch office in the Claus Spreckels building, San Francisco, Cal., and has appointed Lathan McMullin manager.

F. A. Poor, president of the P. & M. Company, Chicago, has gone to Washington, D. C., to take service with the American Red Cross at its national headquarters.

A. H. Told, eastern representative of the Positive Rail Anchor Company of Marion, Ind., has been appointed general manager of this company, succeeding **Frank M. Robbins**, who has resigned to go with another company.

J. G. Tawse, sales agent for the American Brake Shoe & Foundry Company, at Chicago, has been appointed general sales agent of the Spencer Otis Company at Chicago, effective August 1.

F. H. Charbono, who for many years has represented the Independent Pneumatic Tool Company in the East, with headquarters at New York, has been appointed manager of the southern district, with headquarters at Birmingham, Ala., to succeed **George C. Wilson**, who has resigned to look after his interests in the North.

P. A. Greene, for many years identified with the Gibraltar Manufacturing Co., manufacturer of the Gibraltar bumping post, has become connected with the Mechanical Manufacturing Co., Chicago, and will represent this company in the further introduction of the Ellis bumping post.

R. L. Mason, who is the Pittsburgh representative of the C. F. Massey Company, manufacturers of reinforced concrete railway culvert pipe and of Klein & Logan Company, manufacturers of railway tools, will sail shortly for France, where he will be connected with the Y. M. C. A. During his absence his business will be taken care of by **W. I. Creese**.

Henry Stroh, who for the past 10 years was connected with the Elliot Frog & Switch Company, prior to which time he was associated with the Republic Iron & Steel Company, both of East St. Louis, has entered the service of the Walter A. Zelnicker Supply Company, St. Louis, Mo., in the sales department, and **Merle G. Peterson**, who was formerly associated with the Niles-Bement-Pond Company and the Pratt & Whitney Company, has recently entered the company's Chicago sales department.



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